The Builder.

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Tewkesbury Abbey.

ONE effect of the more public appeal for funds in aid of the restoration of Tewkesbury Abbey Church, which has recently been made by the promoters of that restoration, will perhaps be to draw more of the attention of English architects to a monument of our early architecture, which in grandeur is second to few: in interest, second to none in the kingdom; but which has not received attention or admiration at all commensurate with its merits. This comparative neglect may probably be traced to the same cause which has operated in one or two other similar cases; the fact of the locality lying out of the frequented line of railway traffic, and the town in connexion with it being one of those quiet, old-fashioned places to which no crowds are ordinarily drawn in pursuit of business or pleasure. In glancing at reports of meetings on the subject of the restoration of the church, we have, nevertheless, been surprised to see acknowledgment of very slight acquaintance with the building, or none at all, on the part of architects and amateurs who are noted for their enthusiasm on the subject of Mediæval remains. No one, we are convinced, who knows what there is to be seen at Tewkesbury will fail to see it for himself at the earliest opportunity, and to be glad of any special interest in connexion with the subject which led him to visit the church and study its beauties and peculiarities on the spot.

Our object in the present remarks is architectural rather than archæological, but we may just recapitulate here the heads of the history of the church, which is better known than that of some other similar monuments, and is to be found pretty fully given in several published works.* The place was a monastic foundation before the existence of any portion of the present structure, being then a dependency of the Abbey of Cranbourn. It is said to have been in 1084 that Geraldus, the then abbot of Cranbourn, determined to take up his residence at Tewkesbury, and to replace the existing buildings, then in a ruinous state, and doubtless of a very primitive and simple character, with an erection of greater magnitude and stability. What he might have made of the matter by his own efforts we know not, but shortly after his scheme had been taken in hand, a grant of property in the neighbourhood was made by William Rufus to Robert Fitzhamon, a nobleman formerly of Astremeville, in Normandy, who appears to have given his hearty patronage and assistance to the work, and whose name has been associated with the history of the Abbey ever since. What we see may, in fact, be called, for the most part, Fitzhamon's building; and this origin of the splendour of Tewkesbury Abbey is an interesting comment on the remark of M. Viollet-le-Duc, as the result of his study of Early Mediæval architecture in France, that the prosperity and grandeur of the architecture went hand in hand with the influence of the regal power. But that the king delighted to honour Robert Fitzhamon, and honoured him by this particular grant of land, we might have no adequate cause for devoting a considerable space to Tewkesbury Abbey Church.

The building erected under this lay assistance and patronage was partially habitable by 1102, and ready for consecration in 1123. Its integrity of style as a Norman church was first materially interfered with about 1237, when it is recorded that Prior Sipton rebuilt "the chapel of St. Nicholas." What part of the building was thus called is not known certainly, but what was done about this date was the building of a square chapel in the lancet style on the east side of the north transept, in place of the apsidal chapel which stood there, as in so many Norman churches, and the counterpart of which in the south transept is still in good preservation: and in addition to this there was built at almost if not precisely the same date, a smaller square chapel northward of the last-named (in existence, but much dilapidated) and a longer apartment opening into this, and running across the face of the north transept. This latter is now entirely removed, and only the large finely-moulded Early English arch which was cut through the Norman wall to give access to it, now remains. The monastic buildings, we may observe, are said to have been burnt in 1178, and marks of fire are traceable on the church; but as all the monastic buildings have disappeared except the gateway, which, as it now exists, is almost entirely a late Gothic construction, this part of the subject hardly concerns us here. The next and most important alteration, upon which the special character of the eastern portion depends, was made about 1310-50, probably, and consisted in the rebuilding of the choir arcade upon the old cylindrical Norman piers, and the addition of a series of chapels round the ambulatory in the chevet form so common in France, but scarcely known in this country, except at Westminster. Of the peculiarities of this part of the building we will speak in detail presently; it may be observed that this important alteration is attributed to the munificence of the family of De Spenser, who were leading people in the neighbourhood from about 1320 to the early part of the following century, the last of the family who concerned himself in the church being apparently Sir Guy de Brien, who married the widow of Hugh de Spenser. It may not be fanciful to attribute to some peculiarly foreign sympathies and ties of this family who retained so much French in their names, the fact of the exceptional and un-English character which has been given to this part of the church. It was under the influence of the same family, probably, that the nave and transepts received, somewhat later, the elaborate vaulted ceilings which now contrast so singularly with the stern and massive architecture of the substructure; the crossing, which was originally open up to a high point in the tower, was vaulted at the same time and on the same level as the rest. In 1660 the tower (originally surmounted with a timber spire, which fell at a comparatively early date) received its present weak and ineffective turrets and battlemented parapet. In 1686 the present large west window was inserted; the date is recorded on a shield affixed to one of the mullions; for so late a period the window is better than might have been expected, and, in fact, in one or two details seems to reproduce work of an earlier style. The last important change was in 1720, when the high-pitched roofs of the nave and transepts were removed and replaced with low ones, concealed by bad parapet walling of semi-Classic style, erected on the old gutter-table.

Approaching the church by the principal entrance to its precinct, by the gateway opposite the north porch, the only feature that is very striking is the tower, which, with the exception of the unlucky pinnacles and parapet, is a piece of pure rather late Norman work (there is a perceptible distinction of style between it and the substructure), very impressive in its simple and broad treatment. It rather loses by the removal of the high roofs, the weather-moulds of which disfigure the faces of the tower, while the removal of the roof obliterates the motive for the distinction between the absolutely plain masonry of the lower part and the rather ornate work above, besides destroying the pyramidal effect which the whole would have had originally. The decorative treatment consists in two tiers of arched windows and wall arches, ranging together, and in which the zigzag decoration is freely used, and a small tier of moulded interlaced arches which intervenes between these, forming a broad decorative band round the tower. The ornamental treatment is, however, completely subordinate to that appearance of massive squareness and solidity so characteristic of Norman towers. Looking at the body of the church on this side, we see nothing in its present state of much interest. There is a good Norman porch, presenting no special feature, with a later addition over it. We see that late Decorated windows of somewhat meagre design have been inserted in the aisle walls, and still later and more meagre ones in the clearstory. Originally, the clearstory has had a wall arcade all along it, with no doubt small narrow windows at intervals; a considerable part of this is left, but a good many of the caps and shafts are renewals, and the design has been altered by cutting away two or three shafts at intervals, and throwing an awkwardly-shaped low segmental wall-arch across the space, within which the late windows have been pierced. The arcading in its original form is seen on the east wall of the south transept, while on the south side of the nave it is gone altogether. On the aisle walls on the north side, too, much of the masonry is evidently not in its original state externally, and between the third and fourth windows (from the crossing) a

* A useful and compact little book on Tewkesbury Abbey, is that by the Rev. John H. Blunt, founded on Mediæval chronicles, of which the originals are in the British Museum and elsewhere, and which is full and trustworthy, without being tedious.

flying buttress has been built in the fourteenth century, to counteract some settlement. On the west and north walls of the transept, however, we see much of the unmistakable Norman masonry, with its thin black shadows in the joints, and its remarkably massive and enduring appearance,—an appearance partially deceptive in this case, as it is probably the movement outward of this wall from settlement which has necessitated the removal of the Early English building before mentioned, and has pushed the still-existing chapel of the same date, at the north-east angle of the transept, far out of the perpendicular, one portion of its walls being actually shored up at present, while a Mediæval flying-buttress has been built at one of the angles, about the same time as that against the aisle wall just mentioned, to try to prop the chapel-building up. But we are intruding on the vicarage-grounds now, which adjoin the east end and south side of the church, and will return westwards, remarking by the way the fine Early English archway (before mentioned) in the transept wall, which formerly gave access to the chapel that has been removed, and which is now partially built up, but so as to leave exposed externally the arch mouldings and the deeply-recessed jambs, with four shafts and capitals on each side, of which six capitals and two of the shafts remain in partial preservation. Going down to the west end, and turning to look at it, we come upon quite a *coup de théâtre*. Nothing on the flank of the building suggests the existence externally of any feature so striking and unusual as what we see here, the effect of which must take by surprise even those who know from engravings what is the nature of the design. The whole centre of the front is filled up by an immense deeply-recessed arch, the jambs formed by six great shafts carrying an arch of six corresponding orders, six arches recessed one within another with a slight moulding on the outer face, and a big "roll" on the angle of each; the soffits plain. In all ancient English architecture there is perhaps hardly an incident more striking, more distinctly deserving to be called a stroke of genius, than this west front, the leading motive of which immediately recal's Peterborough; and though of course not on quite so large a scale, it has the advantage of being in finer preservation, not to say of a bolder and grander treatment in detail. The state of preservation of this part of the work, obviously untouched, is wonderful; the lines of the shafts and arches are for the most part as straight and clean, the thinly-shadowed joints as regular and even, as if it had stood but for fifty years; and the tones of the slightly lichened stone would be delightful to a painter, and not less so the continually varying play of light and shadow in the deeply-recessed arch, as the sunlight comes and goes and the shadows shift their position. What was the original filling in of the arch is not very apparent; the original Norman wall within it has been laid bare by the removal of some of the late masonry at one side of the west door; probably it was a plain wall with Norman windows in it. There seems no reason for supposing any special motive in the building of the great arch other than a pure desire for a grand effect. The centre is now filled, as we mentioned, by a large very late window and door, which look very trumpery amid their surroundings, but cannot spoil the effect of the whole. The finish of the front is unusual and remarkable; an examination of the substructure internally shows plainly that towers were intended, but they have never been carried out, and the front, ornamented with arcades on the portion adjoining the haunches of the great arch, finishes with the two turrets of most peculiar and unusual design, which serve to complete the unique character of this front. They terminate in a circular centre turret with a stone conical top, and four smaller conical pinnacles at the angles.* The last time we looked at the front a jackdaw sat on the apex of each centre cone, as symmetrically as if placed there for ornament.

Entering the nave by the north door, we find before us one of those arcades built upon the tolerably tall, thick, cylindrical columns which formed the first inspiration of the Norman builders in some of their greatest works, as in the nave of Gloucester: the system which was commenced at Romsey and abandoned, after a couple of bays had been built, in favour of the more advanced system of grouped piers which formed the transition to the true Gothic pier. At Tewkesbury, however, the piers are of unusual height, especially as compared with the triforium, which is divided off by no kind of horizontal string, but marked merely by small couplets of openings, with a short thick column between them, over the haunches of the main arches. The nave contains eight bays, the westernmost bay narrower than the others. The total length, however, is practically nearly the same as if another bay were added, the additional length being made up by the masses of solid wall at the back of the western responds, intended as the substructure for western towers, which as before observed, were never carried out on the scale at first contemplated. The original intention in regard to the plan of the west end it is not easy to understand, in its present much altered state. The faces of the piers behind the responds were not originally unbroken up to the present west wall; there was a broad flat projection or buttress on the inner side of each, towards the centre aisle, which has been cut away a little below the springing of the fourteenth-century vault, at the same time as the vault was made, and is now stopped in each case by a corbel, richly carved with figures and foliage, the latter in a very fine bold style of work. At the same time a pointed arch, with splayed edges, was carried across the west end, starting from the upper part of this same projection, and forming the termination westward of the new vault. Between this arch and the present west window (which is much later) two moulded ribs spring from corbels of different design, parallel with and following the line of the pointed arch, and evidently referring to some intermediate phase in the architectural treatment of this part of the building, between the Norman work and the seventeenth-century window. Coming back to the nave, we may conclude that there was originally a wooden ceiling, probably with roof-shafts, on corbels above the capitals of the main arcade; one such wall-shaft, semi-cylindrical and carried down to the ground, remains, adjoining each western respond; and in the aisles there is a similar shaft opposite each pier, and some of the corbels carrying the intermediate roof timbers of the aisles remain. Now, the nave is entirely vaulted with a late fourteenth-century vault, seen in our view*; that in the centre of considerable elaboration of design, the larger bosses carved with figure subjects, the smaller with foliage, and mostly in very good preservation, though at present whitewashed over. A feature in the design is the existence of a longitudinal rib parallel to the ridge rib on each side, in the upper portion of the vault. The aisle vaults are roofed with a simple quadripartite vault with ridge ribs, with the transverse ridge level on the side next the arcade and falling on the outside to the crown of a low segmental wall-rib, somewhat below the level of the main arcade. Originally, no doubt, the centre aisle would have had a clearstory of small Norman windows; it now shows from the interior the wider late Gothic windows inserted; which, however, can only be seen on looking up from a position nearly under them, as the vault cuts across the widely-splayed opening in a singular manner, the wall-rib of the vault ending in the air, as one may say, in the centre of the window-space. The effect is, of course, very clumsy, but so characteristic of Mediæval independence of method in working that one cannot wish to lose it. The vault springs from corbel-heads, of its own date, inserted immediately over the capitals of the main piers. The short pillars in the triforium couplets have ornamented capitals, showing here and there those tentative beginnings of foliage ornament which mark the Norman style when commencing its transitional stage; but, except these, and an incised ornament round the abaci of the principal capitals, the Norman portion of the work is sternly plain, and depends for its effect only on mass and proportion and a few simple mouldings. The main arches are once recessed, and the outer order has a simple roll moulding. We may mention, while in the nave, the small font, retaining the Early English water-holding base-mould, in conjunction with details of a character usually assigned to a later date; and the stalls which at present stand in the nave, and are good work, but not of any exceptional interest. All this time we are in the part of the building which is still untouched by restoration, and veiled under the whitewash of the churchwardenery: we will now pass round the temporary screen fixed at the second pier from the crossing, and see how matters look on the other side, and how the interior of the remarkably-planned choir comes out under the hands of the restorer; but must defer what we have to say till our next issue.

* In a paper read before the British Archæological Association at Tewkesbury, by Mr. T. Blashill (August 20, 1875), and which contains some rather rash statements, it is asserted that these turrets, "including the highest window openings, are evidently a modern imitation of twelfth-century work." We deny that they are "evidently" any such thing. The upper windows have certainly been repaired, and one of them is filled in with an imitation Norman pillar or baluster, and the turrets are capped with apparently Gothic finials, possibly put on at the same time. But there is no perceptible evidence, from below at least (and we examined them carefully in a strong sunlight), of any distinction between the character or date of the masonry in the main portion of these curious and unusual turrets, and that of the undisputed Norman work below them. Sir G. Scott, who makes special reference to their peculiar character in his original report on the Abbey, does not, we observe, throw the slightest doubt on their authenticity as genuine work, and if Mr. Blashill calls these imitations of twelfth-century work, can he tell us from what they are imitated? As far as we know, they are unique in England; but they have a very strong dash of early French character about them, and suggest, like other incidents in the building, the foreign taste which seems so much to have influenced it, both in its earlier and later periods.

* See p. 375.

DRAWINGS FROM EGYPT AT THE BRITISH MUSEUM.

A REMARKABLE collection of drawings and sketches illustrative of Egyptian Architecture has recently been added to the MS. department of the British Museum. This consists of the drawings made during an expedition organised about fifty years ago (1826–33) by Mr. Robert Hay, who was accompanied and assisted by Mr. J. Bonomi, Mr. F. Arundale, Mr. Charles Laver, Mr. Catherwood, &c., to explore and illustrate Egyptian remains. For some reason the results of this expedition, which would have anticipated much that was since done by Lepsius and others, were never published; and the accumulated sketches and drawings now fill nearly fifty volumes of the MSS. library of the Museum. Although much that is contained in them is now familiar to us, the drawings are of the highest interest, as the first systematic illustrations of Egyptian architecture on a large scale, and are many of them of such remarkable excellence as specimens of architectural illustrative drawing as to be well worth inspection on that account alone. With the finished drawings are bound up also, in many cases, the original measured sketches from which they were made, and numerous sheets of pencil notes and memoranda, some of them now faint and difficult to decipher.

Among a portion of the volumes which we have examined may be mentioned the volume of water-colour sketches by Arundale (29,846),* which are, however, more picturesque than strictly architectural: an interesting attempt is made in one sketch to restore the effect of the portico of one of the Dendera temples, as it may have appeared when all the varied colours on the columns and ceiling were fresh, and when the floor was crowded with figures whose costumes carried out the same polychromatic effect, while the blue sky seen between the columns at the side formed the background of the *ensemble*. To the architect, however, some other volumes will be found still more interesting than this. The Beni-Hassan remains are very fully illustrated (29,813) in pencil outline drawings, and coloured drawings of the hieroglyphics and wall-paintings; and perhaps no illustration could more strikingly convey to the eye the strong affinity between these remains and Greek Doric architecture than one of the large perspective drawings of an interior, showing the rows of fluted columns, without ovolo or necking, yet otherwise so much reminding us of the effect of a Doric temple. Other affinities of style are suggested by this volume; the hunting-scenes *en silhouette* on the walls, with the animals and men careering over the irregularities of a heavy country shown "in section," as we should say if it were a modern drawing, curiously resemble mediæval decorative painting in spirit and in some points of execution; and, on the other hand, a drawing occurs of a piece of a sculptured figure having a most striking resemblance to that portion of an antique figure found by Mr. Wood on the site of the Ephesus temple, and now in the Elgin room in juxtaposition to the other Ephesus relics. The resemblance is so strong that we might suppose the two figures came from the same place. This is only one of many indications, which seem to multiply upon us as investigation

* We give the numbers in the MSS. catalogue, of those volumes referred to, for the convenience of any readers who may wish to examine them.

is carried on, of the existence of an antique art very widely spread and very homogeneous in its style and spirit, which has been the common basis of later Egyptian, Greek, and much of Western Asiatic art, from which the later forms we are more familiar with have developed each in its own manner.

Drawings of Thebes and its remains are found in volumes 29,816–17, in which (in the former volume especially) is to be noted the admirable and careful style of pencil-sketching employed in the views of the temples, which are in outline, with the jointings of the masonry most carefully marked, and lightly and carefully shaded with a pencil tint over the sides that are in shadow, just sufficiently to give effect, without in any way interfering with the purpose of the drawing in regard to complete accuracy. Pencil drawing is rather at a discount with architects in the present day, and we seldom see such careful and delicate use of the pencil as in these drawings. There is no signature or apology for one, as far as we observed, to most of the drawings; those which we have referred we take to be those of Catherwood, unless they are by the French draughtsman whose name, E. Thedenat, is seen round the neck of a column in a view in one of these volumes; but this seems different in style from most of the others. We may observe, also, that hardly any of the places are named, or the drawings titled, except by an occasional scribble on the back or on the margin. They are numbered, but no list to which the number may be referred appears in most cases, though the places and objects, where not known, may to some extent be identified by a reference to the written notes which are bound up in most of the volumes. It would be a useful task if some one well acquainted with the subject in detail,—Mr. Bonomi, for example,—would supply titles to the principal sets of drawings.

When we turn to the large set of drawings representing Karnac (29,825–26, the latter especially), we are still more struck with the admirable way in which simple pencil outline has been used for purposes of illustration. The filling in of the numerous details of ornament, hieroglyphic, &c., gives even to the unshaded drawings an appearance of fulness and completeness of effect, but in many instances this is produced simply by very careful pencil outline, in which no problem of perspective in the representation can be glossed or slurred over; and some of these drawings, such as 93, 94, 96, in vol. 29,826, are the perfection of clear, firm, intelligible architectural sketching. Further on we come to small geometrical sections and measured drawings, also in hard, light pencil, and beautifully neat. A very interesting volume is that illustrating the rock-cut tomb of Rekhmara (29,817), with its elaborate painted decorations, representing all kinds of scenes in real life—hunting, cooking, and sacrificial operations, reproduced and coloured with minute care. Vol. 29,830 consists of mostly the same kind of small and neatly-executed geometrical drawings (these are by Arundale) of the small temple at Medinet-Abou; which, as every one knows, looks remarkably Greek in feeling, with its symmetrically-disposed façades in which every stone and line is drawn with minute care. By the same laborious and accomplished draughtsman is a highly interesting small volume (29,855) comprising a classification of the forms of capital of the architecture of the Ptolemaic period. A number of these are shown in geometrical drawing, pencil outlines on a smooth foolscap paper, with plans and sections of the capitals, showing their profiles and the dispositions of the leaves, &c. They are classified in a catalogue according to the orders of vegetation on which they are founded, and the combinations in which various flowers and leaves are employed. This book should be studied, if only to realise how much more variety of detail there is in these capitals than is, we believe, generally supposed; and how logically and consistently the details of flowers and leaves are grouped and conventionalised. There is one curious exception to this, in the use of the date-fruit, which is always treated quite naturalistically. In drawing 18, for instance (from Esneh), we have the conventional triangular leaf, ribbed with parallel lines, so familiar in Egyptian ornament, alternated with bunches of dates represented with the same natural irregularity that we should find in a late Gothic capital. In drawing 19 (also from Esneh), the upper portion of the capital shows a feature exceedingly like the angle volute of a Classic capital, recurring at regular intervals round the bell. Some of these capitals are splendid specimens of severe yet graceful architectural ornament, strictly founded on nature. In regard to the plan of the capitals, the ninefold division of the circle in some of them is a point to be noted. This volume is one which it would be well worth while to publish as a specialty in the illustration of architectural ornament.

Volumes 29835-56, illustrating Philæ and Kalabschi, again afford splendid specimens of pencil drawing, many of them in the shape of elaborate birds-eye views, giving the temples and ruins in conjunction with the character of the landscape. Volume 29,845 contains the series of drawings in sepia or in colour (chiefly the former) by Laver; these are more picturesque and less purely architectural than the others we have been mentioning. Among the most interesting sheets are those which give good-sized drawings of a number of various forms of capital, carefully shaded so as to give the effect of the modelling of the surface and the play of light upon them in a very complete manner. Among the most remarkable drawings, we may mention No. 53, a coloured drawing of the interior of a hall (no title) partially fitted up over part of the floor, flanked on either side by rows of giant figures or Telamones (to adopt an expression from Greek architecture) supporting the cornice. These figures, clad in the drawers or cloth of ribbed stuff so familiar to us in Egyptian statuary, are coloured, apparently (from internal evidence) on the spot, and what strikes one forcibly is the remarkably realistic effect of the drapery and ornaments on these colossal figures; the colour and texture of the stuff, and the manner in which it follows the contours of the limbs being indicated apparently with no aim at conventionalism at all, but rather with the intention of securing as real and life-like an effect as possible. The conclusion this leads us to is different from that usually drawn from the style and manner of Egyptian sculpture; and suggests that, if we had this sculpture always with its original colouring, we should conclude that the conventionalism of this art in Egypt was rather the result of imperfect execution in a very stubborn material, than of any set æsthetic purpose; and that the real object was to represent life as fully as the material and sculptor's ability allowed.

A volume, labelled "Modern Sketches" (29,849), which we turned over, presents nothing of much interest; the artist or artists seem to have been a little bent on extracting from modern Egyptian life some echo of the forms peculiar to the ancient representations; and there are one or two humorous representations of modern events, such as the bargaining of a naval officer with an Egyptian for some curiosity, in which the figures are represented in the manner and action of the ancient mural sculptures. In regard to the ancient work, however, the volumes we have mentioned form only a portion of the collection; what more there may be of equal interest we had not time to examine, but the collection, judging by what we have seen, is well worth examination, as a whole, by all who are interested either in Egyptian architecture, or in architectural drawing for its own sake.

TROY AND MYCENÆ.

BRITISH ARCHÆOLOGICAL ASSOCIATION.

A SPECIAL meeting of this Association was held on Wednesday evening last, in the rooms of the Royal Institute of British Architects (kindly lent for the occasion). Lord Houghton presided, and the meeting-room was crowded to its utmost capacity by ladies and gentlemen desirous to hear Dr. Schliemann, the explorer of Troy and Mycenæ, give some account of his researches.

Lord Houghton, in opening the proceedings, said that the three great archæological societies of this country, viz., the Royal Society of Antiquaries, the Archæological Association, and the Archæological Institute, naturally devoted the greater part of their investigations to matters more immediately connected with the history and antiquities of this country, Mediæval and Roman. Nevertheless, this fact did not separate them from those great sources of art life and thought which now formed, and he hoped would long continue to form, the basis of the education of the youth of this country: viz., the antiquities of Greece and Rome. With reference to Greek antiquities, Dr. Schliemann had revealed to us by his excavations within the last few years more than had been done by centuries of investigation. It was a great thing to find in an excavator not only a man who could dig in the ground and discover wonderful things, but one who could recognise the things he found, and connect them with history.

Dr. Schliemann, who was received with much enthusiasm, then read an elaborate paper, "On Troy and its Analogy to Mycenæ," in the course of which he said he visited the plain of Troy for the first time in 1868, and though he went without preconceived ideas, he first went to Bunarbashi. He found the site altogether in opposition to all indications of the "Iliad," and particularly as to its distance from the Hellespont, which exceeds nine miles, whilst, according to the "Iliad," it was very short, and could not have exceeded three miles. He engaged a number of workmen, and explored the whole extent of the heights, but found everywhere the purest virgin soil, except on the site of the little city of Gergis, at the extremity of those heights, where Mr. J. von Hahn, the Austrian consul at Syra, had previously made an excavation. Here the average accumulation of the rubbish was only from 1 ft. to 1 ft. 6 in. deep, and solely mixed with fragments of Grecian pottery, to which archæology could not possibly allow a remoter antiquity than the second, third, or fourth century before Christ; and therefore the city itself could not possibly claim a greater age, because fragments of pottery were far more indestructible than any city or fortress wall. We could destroy the hugest citadel walls, but we could never clear the site they surrounded from the potsherds, and in these latter we must necessarily always find the two termini for the chronology of the walls, which could neither be older than the oldest potsherds nor more modern than the most modern of them. The insignificant city walls which Consul von Hahn and the lecturer had brought to light had been altogether erroneously called "Cyclopean"; they consisted of oblique retaining walls of polygons, or walls of regular courses of well-cut square blocks, which could not claim that denomination. There could be no reasonable doubt that walls of huge blocks were, without any historical foundations, called, after the mythic giants' race, "Cyclopean," and as the word had come into general use we could not avoid employing it; but it must be distinctly understood that not every wall built of stones without any binding material could be called "Cyclopean," and that under that denomination were only comprised, (1) the walls of large unwrought blocks joined by smaller ones; (2) the walls composed of large polygonal stones well fitted together, but certainly not the retaining walls; and (3) the very ancient walls, such as we saw in the Lions' Gate in Mycenæ, where immense rudely-wrought quadrangular blocks were roughly put together in horizontal layers, but the joints not being quite straight, there remain small interstices between the stones. House or fortress walls of well-wrought quadrangular slabs, which were closely joined without mortar, could never be called "Cyclopean," and thus even the large subterranean treasuries at Mycenæ and Orchomenos could in no way deserve this denomination. As there was no other site which could in any way be brought into harmony with the indications of the "Iliad," Dr. Schliemann went to the site of the Greek Ilium, and recognised there with astonishment that about one-half of Mount Hissarlik consisted of artificial soil produced in the course of ages by the accumulation of successive household remains. Having obtained the necessary firman, Mrs. Schliemann and the lecturer went to work there in 1871 on a vast scale. As we were wont to paint in our imagination an image of every unknown object which was of capital interest to us, so Dr. Schliemann had long previously made in his mind the picture of Troy, and his veneration for Homer made him paint it on a gigantic scale. He thought that it extended far beyond the city walls of Lysimachus, but his illusions were destroyed by the results of twenty shafts which he had dug on the site of the lower city, because all of them, and even the six shafts which he had sunk close to Hissarlik, produced only fragments of wheel-made Grecian pottery and Hellenic house-walls, none of which could claim a higher antiquity than the sixth or seventh century before Christ. On the site of Hissarlik, on the contrary, he found Hellenic masonry and fragments of wheel-made Grecian pottery only to an average depth of 6 ft. 6 in. Immediately below these he collected seventy hand-made vases and a great many whorls of black or brown terra-cotta, so perfectly unlike the Hellenic, as well as all the prehistoric pottery which he found in digging deeper, that he could not but attribute

them to a people who sojourned on the spot only for a short time. There were found no other remains which could be attributed to the people who made these vases, immediately below which Dr. Schliemann found a stratum of ashes and rubbish, about 6 ft. thick, evidently derived from wooden houses, because stones were seldom met with. It was intermixed with masses of hand-made prehistoric vases, and very numerous whorls, with incised ornamentation. Below this stratum of ruins he found a whole prehistoric city, whose 8-ft. to 10-ft. high fragments of house-walls, composed of small stones joined with earth, he could have cleared out like Pompeii. In this city he found much more and much better hand-made pottery than in the preceding one, and thousands of terra-cotta whorls, most of them with a beautiful incised ornamentation. Remnants of a circuit-wall belonging to this city he had noticed only on the west side. Below this city, and at an average depth of from 23 ft. to 30 ft., he found the calcined remains of an apparently much wealthier city, which had evidently been suddenly destroyed by a tremendous conflagration. This city was enclosed by large circuit walls of larger and smaller stones, in which the lecturer brought to light an immense tower and a double gate directed to the south-west. Just on the north-east side of this gate were the ruins of a vast mansion of smaller stones joined together with earth, which must have belonged to the chief or king, for it was the largest building in the town; besides, the other houses consisted of unburned bricks. There must have existed on the circuit-walls and on the tower, as well as on the gate, immense wooden fortifications; and all the houses of the city must have had upper stories of wood, for otherwise the masses of wood-ashes could not be explained. This city had evidently been suddenly stormed and destroyed by the enemy. Tiryns and Mycenæ were also captured by enemies, but the capture there was neither sudden, nor were those cities destroyed by it, because an entire vase was there a very rare occurrence, and one could search there for weeks without finding two fragments which would fit together. Some similarity certainly existed between the various types of the Hissarlik terra-cotta vases of the three pre-historic cities mentioned, for nearly all of them were either tripods or had convex bottoms; besides, nearly all of them had on either side a tubular hole, and in the same direction a hole in the rim and in the lid for being shut and suspended by a string. Certainly, however, there were also new types in each city, and it deserved particular attention that the vases in the lower city were more artistic, and far better made than those in the succeeding city. Furthermore, identical in the three pre-historic cities were the whorls and balls of terra cotta, with their wonderful incised ornamentation; but those of the lowest of the three could easily be distinguished by the colour of the clay, and, as a general thing, also by the superior skill in the incisions. All the incisions had originally been filled with white clay so as to strike the sight. In the second and third cities were found sixteen short Greek inscriptions in very ancient Cypriote characters, and it was, therefore, certain that the Trojans spoke Greek. Below the third city were the 16 ft. to 20 ft. deep ruins of a still more ancient, but still smaller city, because it was limited to the original size of the rock, which, having increased by the ruins and rubbish both in width and height, each of the subsequent cities was larger than its predecessor. The pottery of this lowest city was beautiful, but altogether different from that in the three upper cities, and the finest was only found on and near the virgin soil. Characteristic were here the hand-made large deep plates of lustrous black or brown colour, whose interior was covered with an incised ornamentation filled with white clay, and with two long beautifully-shaped tubular rings in the rims for suspension with a string; but by far the larger part of the vases was monochromatic lustrous black or brown, and had no incisions. There was a very great similarity between the hand-made monochromatic pottery of this most ancient Trojan city, and that found in the five royal Mycenian sepulchres, and one involuntarily thought of the common origin of the royal houses of Mycenæ and Troy; for Pelops, the father of Atreus, the grandfather of the king of men, Agamemnon, was the son of the Phrygian king Tantalus, whilst Ilium was, according to the tradition, built by Ilus, who came from Phrygia. Identical with the Homeric Troy, which was captured by the Greek army, must be the city second in succession from the virgin soil, because here we found the great tower, the huge walls, whose construction Homer attributed to Neptune and Apollo; and here we further found the most evident proofs of great wealth, and a sudden destruction by the hand of the enemy. The extent of Troy, as encompassed by its walls, was but very small, and it could not possibly have contained more than four or five thousand inhabitants; but, small as it was, it was still larger than the city of Athens under the kings, which was confined to the Acropolis until Theseus added twelve surrounding boroughs to it. The Acropolis was then only two-thirds as large as now, it having only been enlarged by Cimon about 464 B.C. The lecturer maintained that the royal city of Mycenæ was originally confined to its very small Acropolis, because only part of the lower city had a circuit wall; by far the larger part of the lower town was merely a suburb. Besides, there were evident signs that the lower city wall was built centuries posterior to the time of Agamemnon, and thus in a remote antiquity the whole of the lower city of Mycenæ must have been a straggling suburb. The same must have been the case with Athens, and as the Right Hon. W. E. Gladstone had suggested in his celebrated work, "Homeric Synchronism," the same must have been the case with Troy. The question whether Homer ever visited Troy was difficult to answer. Mr. Gladstone had proved that Homer was an Achaian, and this was also proved by the lecturer's excavations at Mycenæ, because he found there thousands of masterpieces of art such as Homer described, and the poet evidently passed his whole life in a civilisation like the Mycenian. On the other hand, the mode of burial which Dr. Schliemann found in the royal tombs in Mycenæ was perfectly unknown to Homer, who only knew of the burning of the bodies in the funeral pyres and the deposition of the ashes in funeral urns, of which the lecturer found many hundreds in the depths of Troy, but not a single one in Mycenæ, where the bodies were burnt on pyres prepared on the bottom of enormously large and deep tombs. The primitive state of civilisation which the antiquities of Troy denoted was of course no proof that they were more ancient than the masterpieces of art of Mycenæ, because in the heroic age nobody travelled except on warlike or piratical expeditions. Thus there might have been a very high civilisation at Mycenæ, while at the very same time the arts were only in their first dawn at Troy; and writing with Cypriote characters might have been in use in Troy more than a thousand years before any alphabet was known in Greece. There could consequently not be the slightest objection to admit that the tradition which assigned the tombs of Mycenæ to Agamemnon and his companions, who on their return from Ilium were treacherously murdered by Clytemnestra or her paramour Ægisthus, may be perfectly correct and trustworthy.

In the discussion which followed,

Mr. Gennadius, the Greek *Chargé d'Affaires*, in response to a call from the chair, gave some interesting particulars of the work which is being done by local archæological societies in Greece for the exploration and conservation of the monuments of antiquity. Although these societies were greatly hampered for want of funds, they had done much useful, though unostentatious work, as would be seen by a comparison of the views of monuments given in such books as that of Stuart, with photographs of the monuments as they now appeared. The mounds of rubbish and the hovels, or not much more pretentious buildings, which obscured them, had been removed. True they had not yet set up the fallen pillars of the Parthenon, but this was not a solitary instance of antiquities being kept in wooden sheds until better means could be obtained of preserving them. It was no longer possible, however, for any remains of antiquity to be wantonly destroyed or mutilated. The local museums of Greece were becoming filled with small fragments and objects found from time to time, and the local museum authorities were so jealous of retaining objects of antiquity found in their respective districts for their own museums, that it was exceedingly difficult to obtain such objects for the museums at Athens.

Professor Donaldson, in moving a vote of thanks to Dr. Schliemann for his paper, said he had been charmed with the discretion Dr. Schliemann had displayed in dealing with the subject.

Dr. Birch, Keeper of Oriental Antiquities in the British Museum, seconded the motion, and said Dr. Schliemann had undoubtedly made one of the most important discoveries of the age, and he would stand as one of the most distinguished excavators of the remains of ancient art, and as one who had thrown a new light upon antiquity. Dr. Schliemann's discoveries at Troy had shown them what Troy actually was, and had enabled them to determine that there had existed an ancient city where illustrious deeds had been performed by Trojans and Greeks. Afterwards, doubtless, the poetic imagination of Homer had somewhat exaggerated those deeds, and his version had been accepted by his contemporaries as the true one. The discoveries at Mycenæ were perhaps more interesting, but it was difficult to discuss them fully until Dr. Schliemann's book had appeared. The whole world would be indebted to Dr. Schliemann for his discoveries. Nowhere were his efforts more appreciated than in this country, where there existed a deep love and feeling for Greek art, which had been imbued by the classical knowledge imparted to all who received what was called a liberal education. He suggested that if possible Dr. Schliemann should, with the consent of the Greek Government, allow a portion of the products to be sent over for inspection and examination.

Mr. Godwin moved that this "Association tenders its hearty congratulations to Dr. Schliemann upon his discoveries at Mycenæ, and it hopes that results of equal importance may reward his labours upon the plains of Troy." He said that Dr. Schliemann's remarkable discoveries were the outcome of a life of effort and self-culture. Dr. Schliemann's autobiography was one of the most valuable books which could be placed in the hands of any young man or woman. He taught himself language after language, and fought down all the obstacles which beset him, and having realised a fortune commercially, he set himself to perform what seemed to be the work of his life,—the discovery of the lost Troy. His discoveries at Mycenæ would be of immense value in many ways. Those who had studied the subject most had always felt a difficulty in understanding how it was, by what steps, Greece obtained its sublime perfection in sculpture. In the discoveries at Mycenæ we had evidence of the existence, centuries before the time of Phidias, of a school of artists and workers in metal of very great ability, equal to portraiture. Now Phidias, as an outcome of these workers in gold, was not so difficult to understand as Phidias standing alone, as he had heretofore been seen. It would be a very bright page in the transactions of the British Archæological Association which recorded their admiration of Dr. Schliemann's labours.

Mr. Thomas Morgan seconded the resolution, which was carried by acclamation.

Mr. Loftus Brock read a letter from Mrs. Gladstone stating that although Mr. Gladstone had made every arrangement to be present, he had been obliged, greatly to his disappointment, to go to bed on account of illness.

Lord Houghton then formally presented the Association's diploma of hon. membership to Dr. Schliemann, remarking that the Association was thus conferring honour upon itself rather than upon Dr. Schliemann.

Dr. Schliemann having acknowledged the gift,

Professor Donaldson, in a few well-turned sentences, paid a graceful tribute to Mrs. Schliemann, and proposed a resolution expressing appreciation of her services in connexion with the explorations undertaken by her husband.

On the motion of the Earl of Effingham, seconded by Mr. J. R. Planché, Somerset Herald, a vote of thanks was given to the president and council of the Institute of Architects for allowing the Association the use of its rooms.

Mr. Charles Barry, in reply, said that archæologists, to be worthy of the name, ought to know something of architecture, while architects who were worthy of the name could not fail to take great interest in the labours of archæologists.

Mr. J. A. Roebuck, M.P., moved a vote of thanks to Lord Houghton for presiding.

On the motion of Professor Donaldson, seconded by Mr. Ouvry, president of the Society of Antiquaries, a vote of thanks was given to the Greek *Chargé d'Affaires* for his kindness in attending, the mover suggesting that perhaps Mr. Gennadius would represent to his Government the importance of affording facilities for archæological exploration.

Mr. Gennadius, in reply, said he would convey the sentiments of the meeting to his Government, although in Greece such excavations were permitted and encouraged, subject to certain necessary restrictions.

FRESH INQUIRIES BEARING ON THE HEALTH QUESTION.

It took us some years to bring public opinion into the right track in respect of sanitary reform, to educate inquirers, and to point out the direction in which improvement could be made. It was done at no small cost of money, health, and time,—but it was done. The matter now moves of itself, but how slowly! We are to have another Parliamentary inquiry, by Royal Commission, into what is, in fact, a branch of the great sanitary question. It is almost disheartening to find how little has been done, and at how great a cost, in this matter, since 1872, when the country at once responded "ay" to the question, "Shall we set about preventing preventible mischief in the right way?" After five years of legislation and administration, the country hears that the offices of important departments of the public service are unsafe for human occupation. The various local authorities surrounding the metropolis have discovered that none of them can act alone, and that no concerted action will suit all parties. And when an unusual, though not unprecedented, rainfall puts our river valleys under water, instead of setting to work to remedy the evil, we are to have a fresh inquiry into the powers of our various bodies of River Conservancy! In each of these different departments of the same great subject there are displayed the same ignorance, irresolution, and helplessness. It is a state of things for which we are paying very dear. The water supplied in New-street, it is now said, communicated the typhoid poison to Dr. Mackaye, an officer whose death may be termed with perfect justice a national loss. No less is it an irreparable grief to a large circle of surrounding friends,—to all who knew the kindly large heart and conscientious industry of the man. The health of the Navy owes much to the labours of Dr. Mackaye, as the blue books drawn up year by year by his hands remain to testify. The English navy has been growing since the time of King Alfred. It is the sheet-anchor of the national safety, and the favourite public service. Is it not incredible that it was left to a medical officer of our time to be the first man to urge the propriety of teaching every sailor to swim? In the prime of his usefulness this man has been just extinguished by handing him a glass of the poison supplied in the name of potable water in the heart of our metropolis, and in an office of our administration. It is a melancholy reflection. It is another instance of the folly of attempting to do technical work by unprofessional hands. When the idea first got hold of the public mind that typhoid fever and other scourges of the time were preventible, a double problem was presented for solution. The first part of it was purely medical, or rather chemical and physiological. It was necessary to discover the conditions of danger. The second part, which was the sequel and counterpart of the first, was mechanical. It was the question how to remove these conditions; and as the first inquiry demanded, and, to a great extent, received, the systematic and organised attention of the medical profession, so did the second demand what it has altogether failed to receive—the systematic and organised study of the engineering profession. The first part of the problem presented, it may be, the most serious difficulty. To detect an invisible, lurking, deadly foe, to trace the evil to its source, and thus to indicate where the remedy was to be applied, was a far more recondite task than was that of providing the remedy. But there was this difference in the two parts of the problem. The first could be, and was, investigated by the separate and private study of hundreds of inquirers. Every physician, in the course of his practice, had the subject forced upon his thoughts. He might wish to compare his experience with that of his brethren, and no doubt much light was obtained by such mutual reference. But the primary facts were special and individual. They were collected one by one; and the experience thus attained had a natural tendency to coalesce—to build itself up into a true and useful theory.

With regard to the second part of the problem, the mechanical measures proper to be taken to remove the sources of danger, the process requisite is exactly reversed. In the former case we ascended from detail to principle; in the latter case we have to descend from principle to detail. We had a physical problem to settle. The first thing was to lay down the conditions of that problem. These conditions are none other than certain physical facts. It is requisite in the first case to collect these facts. It is not by a reference to private note-books that this is to be done. The inquiry is of a broader nature, and can only be inaugurated by proper public authority. The doctor has traced the cause of danger to Mr. A.'s drain, or Mr. B.'s well. But it is of no use to ask the engineer to attend to the state of Mr. A.'s drain, or Mr. B.'s well, except as forming individual instances of the wells and the drains of the district. Nor can this be done without knowing all that intervenes between, on the one hand, the water-collecting slopes of the district, and on the other hand, the outfall of the entire water collected on them into the sea. The doctor, or the surveyor, points out, say, that the drain complained of is in a bed of gravel. It tells the engineer absolutely nothing to inform him that the bed of gravel underlies all Mr. A.'s premises. The information needed is far wider. It is necessary to know the entire area, depth, surface level, and other particulars of the gravel in question. Is it a pothole in the clay? Such is the case with some very favourite, and also very fatal, spots with which we are acquainted. Is it a large sheet of pervious material watered and cleansed by every shower? Is it the part of a large subterranean reservoir, containing water that rises and falls with the rainfall? To show what we have to do with the one drain, or the one well, we must know all about the local geological formation in which it is situated; we must know the relation of that formation to those below or around it; we must know climatological conditions, hypsometrical conditions, agricultural conditions; in fact, we must be in possession of so many elements of a physical nature that they can only be ascertained by an exhaustive and complete survey; and can only be grasped by the mind when they are represented by the graphic methods familiar to the surveyor.

As we see that to set the one little drain in order we must make an extended survey of a district, so does it follow that to complete our survey of any locality we must extend our observation so as to comprehend all those neighbouring localities which may affect the physical condition of the neighbourhood under investigation. That is to say, an efficient treatment of the simplest case of preventive sanitary engineering must be based on a thorough and competent survey of the entire water-shed district of which it forms a part. Here, then, we come in contact with a group of elements which, though distinct, are mutually related. As we ascend towards the upper limits of the districts sketched out by Nature herself, questions of amount of rainfall, of percolation of soil, of formation of torrents, of surface or subdrainage, require investigation. As we look in the other direction we have to inquire into the condition of river-banks and channels,—the existence of weirs, mills, and other obstacles to the free outfall of water,—the habit of so flooding land as to encourage ague rather than good meadow hay,—the vested rights of water-owners and riverain proprietors. In a word, we find that in order to deal at once simply, efficiently, and properly with the small item of house protection with which, on the report of the physician, the engineer's duty was supposed to start, we must have that hydrographic survey of the district without which all pottering with individual works will be done in the dark, and very probably will involve useless cost.

The public sense of insecurity which stimulated the then existing Government to bring into Parliament the abortive measure of 1872 had been awakened by the attacks of typhoid fever, fatal in many cases—happily only almost fatal in the most illustrious instance—which had been experienced by many well-known and highly-regarded individuals. Such a case as that to which we referred at the commencement of these remarks is but too well fitted to reawaken general alarm. But the trouble which has actually led to the appointment of the Duke of Richmond's committee is of another kind. It is, indeed, intimately connected with the public health, although it may be thought only very indirectly to be concerned with the spread or the aggravation of the chief zymotic diseases. It has been the unusual extent and persistence of the floods of our river valleys, especially of the valley of the Thames, which has spurred Parliament to the conclusion,—"Really some one ought to inquire if anything can be done to improve the state of things." This primary A, B, C inquiry is the object of the Special Committee. To us Englishmen, accustomed to the hap-hazard manner in which our national good sense, after much loss of time, waste of money, and inconvenience of all sorts, usually brings us pretty right in the end, the commencement of such an inquiry in the present year may seem to be natural, useful, and timely. But to any one who regards the matter in the abstract, who will put himself for a moment in the position of an historian or a chronicler, or of the subject of a state in which the Governments consider that attention to the communications and the watercourses of the country is a part of its bounden duty, the question arises,—What have we been doing for the last five years? The collection of those physical statistics which must form the basis of any intelligent sanitary works in any part of the kingdom was, as we pointed out with great precision in 1872, and on many subsequent occasions, the first requisite. Whatever was thus done, and well done, should have been done once and for all. The preparation of what we then called the sanitary survey of the country, but which may be called with perhaps more propriety the hydrographical survey of the country, was an absolute and essential preliminary to any intelligent treatment of the great sanitary problem. At the same time, it would afford the data for resolving problems of a like nature and of hardly less importance. The case of floods is one of these. In some cases the flooding of a vicinity is a direct encouragement of the worst zymotic diseases. In not a few places in the past winter we have had accounts of dwelling-houses being flooded with diluted sewage. In other cases it has been the more insidious attacks of phthisis, of ague, of rheumatic and neuralgic afflictions that have been encouraged by the permanent dampness inflicted on houses and on adjacent land. Even when disease has not been positively detected, inconvenience, cost, loss and damage to property and furniture, and interruption to business, have been very great. Had the natural and proper steps been taken, and thoroughly carried out, in 1872 (as we then proposed), this recent damage would have been impossible. Had the necessary survey been even commenced, however leisurely and in detail it had been pursued, we should not have found ourselves now asking for a committee. A thorough hydrographic study of the Thames Valley might readily be completed in a twelvemonth by an engineer provided with a very moderate staff, if only he had due authority to avail himself of all the information which has been already collected, but which is of no use at present, owing to the scattered condition in which it exists. Thus for the basis of the whole, and the most expensive part of the affair, namely, the topographical survey, it would be unnecessary to go to any expense whatever. The information at the command of the officers of the Ordnance Survey would supply all this detail; and the 6-in. and 1-in. maps would serve as the basis of the new work. In the same way the second requisite, the preparation of an accurate profile of the river and its affluents, would be facilitated and verified by the use of the Ordnance bench marks—of which the broad arrows are to be found on almost every milestone. With this preliminary, and most costly, part of the work done, the preparation of profiles and cross sections would be easy. We require a profile of the banks of the Thames from the sea to the water-shed, showing the bottom of the river, the cross sections of the channel, those of the natural valley bottom until it gradually has risen above the range of the flood,—the water level at the lowest summer drought, at the ordinary winter flow, at the highest ordinary and extraordinary floods. To this should be added particulars of bridges, weirs, mills, or any other obstruction to the course of the stream, of culverts and other works for drainage entering or crossing the river, and of the area and distribution, as well as levels, of any irrigated lands. Of course, this survey must comprise, not the main stream of the Thames alone, but the courses of the Kennet, the Thame, the Isis, and other affluents which form the main stream, or such as those of the Wey, the Mole, the Wandle, and other rivers which bring down large contributions to the Thames, especially in time of rain.

It would be a necessary part of the survey to mark the districts under the conservancy of any legal authorities, while a note would indicate the powers and ordinary action of those authorities. This incidental bit of information, which would form a natural part of the plan, appears to be the main object suggested for the inquiry of the Select Committee. This reflection may suffice to show how enormous is the waste

time and cost occasioned by our failing to begin our business at the only true beginning. By the Thames Navigation Act, 1866, the Conservancy of the Thames and Isis from Staines to Cricklade is vested in the conservators of the river. It is the duty of the conservators "by all lawful and proper means to preserve and maintain at all times, as far as may be, the flow and purity of the water of the Thames and its tributaries down to the western boundary of the metropolis." That is to say, a body of persons is to have the responsibility of maintaining the channel of the metropolitan river just to the spot where the consequences of any error, neglect, or misconstruction become most serious and inconvenient. The very fundamental idea of a water-course conservancy has been misconceived by the framers of such an Act of Parliament. And how are the conservators to know anything of the flow of the Thames? or the means of providing for its maintenance? No one, up to this hour, can tell what either the minimum, the maximum, or the flood volumes of that river actually are. We could print a good many reports and estimates on this subject,—some of them by very able men. But the only result of putting the figures side by side would be to show that exhaustive information as yet has to be collected. Thus it is clear that in order to enable the existing, or any future, conservators of the Thames to exert any efficient and useful action, a certain preliminary description, a graphic and technical description,—that is to say, hydrographic plan and sections of the river and its channel,—are a first requisite. Precisely the same requisite is needed by those numerous local sanitary authorities who, having last year failed in their proposed fusion, or harmonious accord, under the advice of the Engineering Inspector of the Local Government Board, are understood to be now again attempting to take up the ravelled threads of the mesh, and to arrive at a new accord. Not one of these local authorities, or their professional advisers, if they have any, can have even the vaguest idea of the main facts which must control their operations, without access to such a survey of the River Valley as we describe. No officer of the Government, whether civil or military in his education, can suggest any sound and useful measure that will combine the greatest public service at the least cost, without having under his eye such a survey. No one can suggest any measure that can be regarded as well considered, with reference to the escape of flood water, the care to be given to every part of the banks of the river, the need for removing weirs or mills, or any important measure for the improvement of the channel, in the absence of such a survey. For navigation, for prevention of floods, for irrigation, for land drainage, for abstraction of water for domestic use, the same primary requisite is a *sine qud non*. With such a survey of the Thames completed as the Italian Government have made and carefully published in the case of the valley of the Po, all the numerous and important questions which press for solution under each of the above heads will, to a great extent, solve themselves. The mystery of the engineer is the mystery of common sense. When physical facts are fully and thoroughly known, there can be but little controversy among experts how to deal with them. Nature herself suggests what we should do in order to aid and minister to her operations, if only we will listen to her voice. Difference of opinion in such matters simply means ignorance of detail. So long as one man puts a maximum or a minimum volume 50 per cent. above the estimate of some one else, the two will suggest very different works for execution. But if both engineers be furnished with the same data, and if these data be accurate and exhaustive, very little room will exist for difference of opinion as to what is to be done. In the case of the Po, the result of completion of the hydrographic survey of the river and its affluents has been such a perfect knowledge of what is required for the protection of the riparian property that the proper works have been divided into categories, and distributed according to their urgency,—so that year by year a definite portion of them will be completed, until the whole system is perfect. Seven eminent men have been specially engaged on this survey, and their recommendations are unanimous, because their information is complete.

In the case of the Tiber, on the other hand, such unanimity is far from being attained. Very different plans have been proposed to the ministry. As many as nineteen, if we rightly remember, have been submitted to a special professional commission to discuss; and the report of the commission has not been altogether unanimous. Why this difference? Chiefly and solely because in the case of the Tiber there has not been collected that full information that has been gathered and systematised in the case of the Po. The quantity of the maximum flood that comes down the Tiber is as yet as open a question as is the quantity of the ordinary and extraordinary flow of the Thames. The rainfall of the Tiber watershed is as unknown as is that of the Thames watershed, or as that would be without the exertions of Mr. Symonds. For that very sufficient reason different engineers, forming different estimates of the volume of water with which they had to deal, have proposed different schemes. Another source of doubt is of the same nature. A partial diversion of the Tiber has been proposed, either by way of overflow, from just without the city-walls, or by way of diverting the course of some of the affluents of the river. This diversion, or either of them, would require, there is no doubt, a considerable excavation. In order to form a sound opinion on the feasibility of such an excavation, it is, of course, necessary to have a section of the ground. This does not seem to exist. But a section, in this case, is not enough. It is stated very positively that the cutting requisite would pass through a soil of so loose and crumbling a nature as to be entirely unsuitable for the bed of a river or canal. This is, of course, a question of fact. As such, it can only be ascertained by experiment. A series of borings would probably settle the question. Thus two points of physical information are defective in the knowledge possessed by the Italian ministry of public works as to the valley of the Tiber. The volume of flood is unknown, although the heights attained in various inundations from before the Christian era are carefully recorded, and the physical possibility or impossibility of the formation of an overflow-channel is in dispute. In fact, as yet the elements have not been collected for stating the problem. Its solution, therefore, is matter of opinion,—that is to say, of guess.

In the far more important case of the Po the facts have been ascertained, and therefore the distinguished experts who have studied the case have no hesitation or difference of opinion as to the course to be adopted.

It is just the same with us. The sanitary problem has witnessed, in the present year, the first attempt—the first serious attempt—at its rational solution. The publication by the Local Government Board of the financial outcome of different methods adopted in different localities for the disposal of the sewage, must be regarded as the first effort on the part of the Administration to afford any general information which may be of service to the whole country. Still it is evident that this information, even if it be kept up and carried out to the full, is comparatively useless without the light thrown on the circumstances of each particular case by means of a hydrographic survey. Without that first requisite we get but scraps of information. Whether, then, we regard the protection of the public from preventible disease; the preservation of the metropolis and the metropolitan district from floods and damp; the economy of public money as expended by the various local authorities; the conservancy of the Thames as a navigable river, as an outfall, or as a source of water-supply; or whether we look at the example of the nation most experienced and most familiar with great hydraulic works—we come to the same result. The hydrographic survey of the rivers and watershed basins of England is the first requisite for public health, public safety, and public economy. If this fact be brought out by the Duke of Richmond's Committee, the Members will do good service to the country.

Spinoza.—A competition has been opened at the Hague for a statue of Spinoza in bronze on a stone pedestal. Artists of all countries are invited to compete. Models in plaster, one mètre high, and representing Spinoza in seventeenth-century costume, should reach Mr. Van Ophoven there by the 1st of October, and should be accompanied by a sealed envelope containing the name and address of the sculptor, and identified by a motto repeated upon envelope and model. The author of the model selected will be invited to make a plaster copy of it on a large scale, and if this also is approved he will receive a premium of 2,000 florins. The second in competition will receive 250 florins.

CENTRAL LONDON: PROFIT OR LOSS IN HOUSEBUILDING?

AT the risk of tumbling into the goody-goody strain of reflection which, at seasons of holiday depression, is peculiarly affected by the chief directors of English opinion, we have arrived at the profound conviction that a vast number of individuals throw away, irretrievably and continually, a great deal of money. A long contemplation of the expanding circumference of London would, it might fairly be supposed, lead us to believe that a really good building-investment is a certain source of gain. Perhaps it is, away from the centre; but in the crowded parts of the metropolis, it appears difficult to make a brand-new house return the profits that were easily obtained from the old one it has replaced. There, housebuilding pays a few, weakens many, ruins some. The noble lords and others who own for ever and ever good metropolitan soil, and who may reasonably be made answerable for plenty of defects in the bad houses erected upon it, are not, however, always placed in an enviable position. As we have studiously repeated for a good many years, the history of an ordinary London house is a succession of sorrows and disasters, shared by many interested in it, but whose interests are usually of an opposite and a conflicting nature. In too many instances none of the speculators come out of the complicated undertaking with proceeds enough to warrant a dream of future riches. In spite of a large number of successful speculating builders,—in spite of a few who have made fortunes,—the prizes in the lottery of house property are certainly not so numerous as the enormous area of newer London would lead people to suppose. It would not pain us, we confess, to hear of some of the minor men who have helped to "run up" streets, squares, crescents, and terraces, retiring gracefully from suburban conquest to solicit the popular suffrage,—and then lucidly, if not fully, explaining to the Lower House the patent imperfection of our land and building laws.

Nor do private individuals, who know little or nothing about the ways of building speculation, but who employ wisely enough architects and *bonâ fide* contractors, seem often desirous of showing, either by deed or speech, that money spent in erecting houses, to sell or let, is either a profitable speculation or a good investment. You may perhaps get five per cent. interest for your money sunk,—that is if you are lucky enough to obtain tenants; and, for seventy or eighty years, your investment may, provided you are lucky, return that rate of interest. But then the anxiety, the risk, the trouble! You can obtain, without any of these concomitant evils, a little more than three per cent. as inevitably certain as quarter day, for ever. Ah! but who builds except in the sure hope of realising at least ten per cent. interest?—a hope sometimes honoured, we admit, but very rarely; and only on condition that the investor has understood the neighbourhood in which his house is placed, the sort of people to accommodate, and the accommodation to offer them. Then,—and, even then, there are exceptions,—housebuilding in Central London becomes a profitable undertaking.

This question, always interesting to a few, is likely soon to become of the utmost importance to many. Never before, since the Great Fire of London, were so many schemes of alteration in the very heart of town as near actual accomplishment as at the present moment. We have waited long, if not patiently, and there is really a likelihood of our seeing during the next few years great changes, if not great improvements. In a recent article* we described the proposals of the Metropolitan Board of Works, which are now being discussed by a committee of the House of Commons; and we have reason to believe that our criticism of the suggested street from St. Martin's-place to Coventry-street has been received in the spirit with which it was made,—in fact, that the Bill before Parliament has been amended in order to allow the new thoroughfare to pass, in an easier line than was contemplated, through Leicester-square. But the piercing of new, and the widening of old, streets by the Metropolitan Board are not all the good things that are promised to Londoners. The erection of the New Law Courts and the removal of Temple Bar are to be accompanied very soon by the widening, in the immediate vicinity, of the Strand and Fleet-street; and the purchase by the Crown of houses in Bell-yard is, we believe, an accom-

* See p. 206, *ante*; and for plan at p. 208.

plished fact. Further west, the decrepit tenements which hold one another together in the narrow streets on the Duke of Norfolk's estate, are already marked out for destruction. The wretched lodging-houses, nests of harpies known too well to country cousins, upon land belonging to the Marquis of Salisbury,—miserable bye-streets out of the Strand, and leading nowhere,—are also to give place to tenements more suited to modern ways of life and present requirements. The Duke of Bedford, with praiseworthy zeal, has personally interested himself in a project for rebuilding the entire square of Covent Garden, once in his ancestors' time a haunt of the worst fame in London; and we believe that a well-known architect is engaged upon the designs. Great Wild-street, and parts of Drury-lane, Bedfordbury, parts of the St. Martin's-lane slums, and other equally unhealthy wynds, are to be replaced by new buildings specially planned for the accommodation of a humble class of tenants, under the terms of the Artisans' Dwellings Act,—so long and tedious in its preliminary phase of working, so apparently innocent of anything like method in its contemplated transformations. In fine, the deliberate bisecting of Soho must inevitably provoke the reconstruction of a large number of houses, not only on both sides of the new streets, but also in the cross streets running through and into them.

"But," says the cautious capitalist, "who will build these houses of which you dilate with such satisfaction? Don't you know that new streets never pay—that shopkeepers and 'upper-part-of-the-house' tenants avoid them? Look at New Oxford-street, at Garrick-street;* look at Northumberland-avenue, where, with all the acuteness of metropolitan representation combined, only a fifth part of the land is in a fair way of being let; look, lastly, at the numberless houses around so valuable and busy a neighbourhood as Covent-garden, in which floors, rooms, even entire tenements and shops, are to let; and which have remained to let for months, quarters, and even years." All this is perfectly true; and the good people who have spent money over the houses in question have thrown a great deal of it away. The fact is deplorable; and the failure to attract tenants deplorably patent and true. And why? Because the Londoner, wedded to the conceit of a sham castle, builds, in the time of underground railways and Hansom cabs, of clubs and co-operative exertion, and of extended scientific knowledge—within a metropolis of four millions,—precisely the same kind of house as that which was fitted for a period of stage-coaches and sedan chairs, of taverns and petty tradesmen, and of the slightest artistic and scientific appreciation, among a population of half a million. He not only ignores the fact that the centre of a capital city is the focus of business,—of public and official life,—and the circumference that of home,—of private and familiar existence: he does not act upon the certain knowledge that the heart of town is inhabited principally by the extremes of the community at large,—the very rich and the very poor; the young men not yet prepared to enter upon the duties of house-keeping, the old men who have escaped from its obligations; the numberless comparatively poor folk who have many children, the well-to-do married couples who have few or none. The modern builder, as if oblivious of the great secret of successful trade, despises this vast mass of population. He provides, in localities where professional men do not congregate, offices fitted only for them; and in all parts of Central London, comfortless and barren rooms for a multitude of bachelors who do not exist.

The whole of this fact is not understood by the principal newspapers; and seldom discussed by any. It is thought to be a speciality, and therefore avoided as likely to be distasteful to the general leaven of buyers and readers. Lately, however, several articles and letters upon the subject have appeared. A great journal, during the Easter recess, communicated some items of intelligence *apropos* of the Artisans' Dwellings Act and the delays of power; it also informed the two hemispheres that,—such is the vitiated character of the London slum,—a metropolitan official, of value and zeal, had twice, according to his own showing, imbibed the elements of typhoid fever in the performance of his arduous duties. But of the sort of houses with which to replace the rotting and rotten tenements under the ban of expropriation, ordinary journalism gives but the very slightest hint. Correspondents' views of improved dwellings, lately published in the daily papers, have unfortunately made nothing clear except their own superficial acquaintance with the difficult subject. The "Peabody flat" has been eulogised; and the desirability of "flat" building has been advocated under the apparent conviction that a startling discovery had been made, which ought immediately to become public property. But the Peabody buildings are neither very different from, nor better than, other blocks of the same description; and according to the statement of their architect they are not intended to be a profitable investment. Neither are they new. Clustered houses and blocks of horizontal tenements are at least 1,900 years old. Indeed, ever since the world of the moderns began,—and, Sir George Cornewall Lewis said, after the historian Niebuhr, "the history of all nations in the ancient world ends in that of Rome and that of all modern nations has grown out of that of Rome,"—the difficulty which masses of people, bent on the same or similar pursuits, experience in occupying a certain restricted space of ground has been felt. From the first century of the Christian Era houses of many stories have been the result and the remedy, in the Rome of Nero and in the Paris of Louis XIV., of Napoleon, and of the actual Republic. Only the Londoner has remained with his eyes closed to these special exigencies of a large population; and to the increasing inconvenience of an enormous, an unwieldy, and an ever-extending metropolis.

But a new era of things is at hand! You are going, O wise and potent Authority! to pull down the homes of thousands of Londoners; you are going to widen streets; to leave large areas of open ground in order to admit fresh air to the new houses; and you have undertaken—at least in the matter of certain dwellings,—to provide new and better homes for thousands of expropriated poor families. You cannot, however, fulfil the whole of the bargain, as the poor understand it, O wise and potent Authority! for a higher power than you is opposed to it,—the power of progress, whose agent only you are. No sane man will rebuild in a renovated Crown-street or King-street, Soho, houses which the people who now inhabit that quarter are in a position to occupy. The houses of the poor wretches who live and die in Bedfordbury are cheap, partly because of the risks which they brave, often unconsciously, in similar plague-begetting dens; to make them better and larger, to expropriate fever and malaria, is to raise their value; and to offer comparative luxuries, which the squalid poor are neither willing nor able to buy. Nevertheless, philanthropy, which has its sham side as well as everything else, is quite right in taking the part of the almost helpless classes whose present homes are condemned. The best argument at its beck is that many of these poor families pay a great deal more rent for their dens than they are worth. That the dens are such as they are is due in a great measure to their extemporised character: to the fact that the houses in which they are found were originally constructed for the special accommodation of a single family, and are therefore totally unfitted for lodging several distinct groups of tenants. Again, you cannot widen streets and leave a larger area for light and air without reducing the superficies of your building land. To accommodate the same number of people upon a restricted site, you must raise the height of your buildings, and pile story upon story in the new houses. In places like Bedfordbury you must have shops at the street level—shops at which the poor can obtain provisions, and the keepers of them must live over or behind their shops. But in thoroughfares like the proposed new streets through Soho, a totally different kind of traffic is likely to take place. There people must erect spacious shops, and probably large warehouses, at none of which the master-tradesman or his assistants will reside; and over them must also be piled story upon story for the accommodation of distinct groups or families. If now we glance at the manner in which this problem is solved, or attempted to be solved, upon some of the old estates, we may possibly point out to inquirers the reason why housebuilding in the heart of town is very often a poor and profitless undertaking.

A description of one of the new and unfortunate houses to which we refer will suffice to give an idea of all. It has a frontage to the street of 18 ft.—perhaps 20 ft.—and a depth of 50 ft.—perhaps 60 ft. The house has not been erected for purposes of speculation, or even of investment; the owner has carried on business in the same spot for a generation, and his father and grandfather probably occupied the whole of the old building it has superseded. He has built a new house simply because it was necessary for him to have a shop on a particular bit of land belonging to a duke or a marquis: that is, to one of the few owners of London land; and he has rebuilt, in obedience to a notice served by his ground-landlord's agent. His paramount thought is to make the new shop as convenient and as large as possible. He lives in the suburbs, and is utterly regardless of the sort of house which is placed over his shop. As in the limited width of 18 ft. he has obtained a shop-window, with a shop-door on one side and a house-door on the other, the entrances are necessarily narrow—the house-entrance ridiculously so—and the house-stairs are as steep as the staircase is confined. He has two rooms, sometimes three, on each floor,—one room looking to the street, the other to the back yard, and the third between, with a borrowed light from both sides. He has taken the basement-story for his trade purposes. The "man and wife" who clean the shop and guard it, before and after business hours, and who "do" the rooms over in case their master obtains tenants, inhabit a room in the roof. But he does not let the "upper-part-of-the-house"; for, if he ask the real value per annum of so much cubical construction, would-be tenants perceive that for a lower rental they can obtain a small entire house in another part of town, or a large entire house in the suburbs. His mistakes have been many; and they are apparent in dozens of instances which we can name. (1) He has erected upon a bit of ground originally covered by a shop and house intended for the shopkeeper's family, a shop and house intended for two or more groups of people who ignore each other's presence and dislike each other's propinquity. (2) He has built suites of two or three barren rooms, which may be taken as professional offices, or as residential chambers; and he has mixed up businesses and homes upon one slender stair. (3) He has imagined that a first-floor tenant, able to pay a rental of 100*l.* per annum, will share with the tenants of the other floors the same indispensable convenience. (4) He has made the two or three rooms *en suite* on each floor each open upon the public staircase. (5) He has forgotten that even mere bachelors sometimes delight in the carnal comfort of a kitchen hearth, and that the club is not always so close as to supply such a deficiency. (6) He provides no porter at the door, no lights on the staircase, no bedrooms for servants, no interior organisation whatsoever. Lastly, there are no solid and substantial horizontal divisions between the different stories of his house; and everything that is done on the third floor is heard by listeners on the second, who participate, often sadly enough, in the conversational exercise of inhabitants on the first.

The chief part of the blunder lies in having attempted to build a shop and house, such as we have just described, upon a site containing a frontage of only 20 ft. But this is not always the fault of the leaseholder, for he may not be able to obtain land with a larger frontage; and, in some cases, the ground-landlord does not permit a tenant to erect a house with a frontage wider than from 18 ft. to 25 ft. This actually occurs on the Bedford estate. When this estate was first cut up into streets, the building land was divided into narrow slices, each fitted for one residence, in a city containing, as we have before said, a population of half a million. Upon each slice a house was built, and between each there was necessarily a party-wall. The horizontal divisions were simply of wood, because the different stories were used in those days for particular purposes by members of the same family. So potent is custom, that a lessee who now borrows *two* orthodox slices at the Strand extremity of the duke's estate, with the avowed intention of erecting upon them *one* building for himself, is compelled to erect a party-wall exactly in the centre of it,—that is, in the centre of his own house,—and the lessor grants him permission to make a doorway in it. This restriction, strange as it seems to those who understand the subject

* A glance at the map suffices to show why at least one side of Garrick-street is a failure. Who can build upon such a plot of ground as that left by the intersection of narrow lanes just opposite the Garrick Club? New Oxford-street suffered from the same defects. It is not sufficient to buy land to make a new street; you must also make the building plots on either side of it of a shape and size fit for profitable erections.

of houses that will reimburse their builders and houses that are erected at a dead loss, has a logical meaning: its object is to protect the commercial interests of his grace, to whom the buildings will belong at the close of a certain number of years, when, so it is foolishly imagined, it may be easier to relet two small houses than one large one. The actual consequences of this restriction are to be seen in King-street and Bedford-street in more than one warehouse; and all around Covent-garden new houses, some wholly, others half empty, betray the obviously bad investment of often hard-earned savings.

On other land, further west, an exactly opposite system prevails. There the ground-landlord says to an intending lessee, "You may have this piece of ground, of 60 ft. frontage, which originally held three narrow houses, on condition that you build upon it only two houses, or,—and this I should prefer,—one block of tenements." The result is that the buildings are remunerative. In Ryder-street and in Jermyn-street, new houses, specially planned for a particular class of residents, and in which a system of household organisation is at work similar to that in vogue in many new blocks of offices in the City, are returning an annual income at the rate of 10 per cent. on the entire outlay for lease of land and building. In the Haymarket, a site, once occupied by three houses, is now covered with one new building, the ground-floor and basement of which are let at something like 1,000*l.* per annum, and the upper floors are, or can be, divided into distinct and comfortable dwellings; but we are credibly informed, and with some emphasis, that many of the tradesmen who have recently rebuilt shops and houses in the neighbourhood of Covent-garden are not realising three, or even two, per cent. for the money they have been compelled to expend.

We do not, however, lament the restrictions which a ground landlord can impose upon lessees, especially when they relate to the quality of construction to be executed upon the land; but, unfortunately, the usual restrictions touch upon the class of business to be carried on, or of tenant who will reside, in the new house, rather than upon the character of its construction. A piece of land, upon which an old, worn-out house has stood, is pretty certain to be black with the filtration of cesspools and the mode of drainage peculiar to the time in which it was built. At the expiry of a lease, or when such a house is pulled down, and fresh arrangements are made to build another house upon the site, the ground-landlord might easily compel his tenant (for the law is above such trifles) to substitute concrete for the putrid soil; but he does nothing of the kind. Again, the ground-landlord, from his knowledge of the surrounding houses, and the manner in which they are occupied, may plausibly conclude that the new house will be inhabited in the same manner; and if different groups of people are likely to live in it, he should say to his tenant, "Since the new house is almost certain to be let by floors, you must build party-floors; and since the staircase will be a public one, you must build it in concrete or in brick, so that it shall be fire-resisting." But, in the majority of cases, he exercises no such beneficial influence; although, as far as the law goes, in the absence of any serious control superior to his own,—and in the avowed monopoly of the soil,—the ground-landlord's omnipotence in building matters is only restrained by his cupidity.

We doubt also whether it is an advantage, either in a commercial or an artistic point of view, to cause a random design for the external wall of a street to be made in total disregard of the shape of rooms, or character of dwellings, to be placed behind it. We do not suppose that the designs, prepared, as we have already said, for the four façades of the square in which Covent-garden Market is situated, have been made without due reference to the buildings to be erected behind them. The front wall of a house should be fitted to the rooms of which it is partly the enclosure,—not the rooms to the front wall; for the exterior of a building, in good works of architecture, is the index of the interior. But the purpose of this article is not directed to the elaboration of grand fronts. Comfortable houses, and buildings which ought to be remunerative, not a loss to the investor, are what we want to see. The great secret in building houses over shops, the two having, like the shops and houses of Rome and Pompeii, no connexion with each other,—is to settle beforehand about the class of tenant likely to occupy the different floors of the superstructure. The public staircase, as well as the public entrance, must be something better than the London private householder is usually satisfied with. Sometimes there must be a servants' staircase; for if nothing is more disagreeable than the encounter of one's own domestic difficulties upon one's own stairs, how much more disagreeable must the sight of other people's pots, pans, and kettles be? Nor ought the housekeeper's friends and children to be obliged to ascend and descend by the public stairs. A lift for goods, coals, and other things is also desirable. The landlord must undertake to light and guard the hall and staircase; to clean, if not to warm, both; and he must not suppose that two or more families, or groups of individuals, will consent to share a common kitchen, either in the basement or the attic story. Moreover, he must remember that the public staircase is the chief ventilating-shaft of the house; that a housekeeper, with a brood of children located in the basement, cannot fail to vitiate the air of the staircase above; or that a housekeeper, with a brood of children in the roof, will ever do otherwise than close all the windows and stop all the ventilators through which the air of the staircase is alone cleansed and renewed. In fine, the investor in house property must bear in mind that what a medley of lodgers will support in an old house, and at a comparatively small expense, will not be tolerated in a new one, at even only a small additional cost. At the present moment, over a large part of Central London, if a tenant does not require a whole house,—and, there, the majority of business men and residents either do not require, or cannot afford, a whole one,—he takes a portion of one; and he settles down in the best way he can by sharing common objects and places with some and fighting over them with others. He then relieves his native indignation by an intermittent outcry against houses in general and his own bit of one in particular. But unless absolutely forced by circumstances superior to his control, the Londoner,—strange animal!—will not submit to the traditional discomfort of "lodgings" beneath a brand-new roof and within walls of uninviting, even though artistically papered, freshness.

LADY ARTISTS.

MADAME LEFEVRE-DEUMIER, who has just died in Paris, was one of the many lady artists that France of this century can boast of. Madame Lefevre-Deumier has been for many years a well-known personage in Parisian society. Once immensely rich, and remarkable for her beauty, she warmly advocated the romantic school of art, in which France has produced so many notables. Her first piece of statuary, a "Young Shepherd of the Island of Procida," appeared in the *Salon* of 1850; the "Morning Star," exhibited in 1863, is probably the only work of hers known well in England; the late Emperor of the French admired her works immensely, and the Imperial party were constantly her sitters, and innumerable busts emanated from her studio during the Second Empire. Unlike the authoress of the "Joan of Arc," Marie, Princess of Orleans, Madame Lefevre-Deumier has left no one great work on which her fame will repose, but she will long remain highly regarded as a devotee at the shrine of art.

Madame Sarah Bernhardt, whose success with the modelling tool and chisel has led her to try the porte-crayon and brush, is not yet so famous at the *Salon* as at the Théâtre Français, and Rosa Bonheur may be said still to surpass just now all other French lady artists. There are many ladies in Paris who professionally practise painting and modelling, but there is no lady painter that we know of who more exquisitely combines the charms of perfectly-contrasted hues and tones with the grace of form and expression than Madame Madeleine Lemaire, whose small water-colour drawings leave positively nothing to desire. We will take another opportunity of speaking of Mdlle. Berthe Morizot's work; it is of an exceptional kind.

In looking over the annals of the French Academy, we find the first lady member of that institution was Catherine Duchemin (wife of the sculptor Girardon), who was elected in 1663, from which time until Mdme. Lebrun we meet with a long string of names of lady artists whose works are regarded more as family relics than as popular objects of admiration. They are chiefly on fans, screens, or are miniatures in quaintly-shaped frames, still hanging in country châteaux, in well-kept chambers, where they have been hung and dusted carefully for 100 years; here and there we meet them in Berkeley-square, or in English country-houses, in Mayfair or Belgravia, in Russia, and who knows but some of our American friends might tell us that many exist in the old homesteads of New England or Louisiana.

Mdme. Vigée Lebrun, whose portrait is one of the most popular favourites at the Louvre, seems to have been, after these, the only lady painter of acknowledged eminence, and few of us are aware that she died as recently as 1842, at which time we suspect that Rosa Bonheur had already shown considerable power. In fact, we think her fine picture at the Luxembourg bears the date of 1850. We find twenty-five or thirty names of French lady artists who lived after the Restoration; but although their works have delighted many possessors, who cherish them in their families, their names have scarcely reached the ordinary lovers of art, whose knowledge of painters is chiefly dependent on those pictures exhibited and emphasised by *ciceroni* in public galleries.

Lady artists in England have for the last three centuries held a prominent position; in the seventeenth century, we have Mary Beale and Anne Carlisle, mentioned by Walpole as a copyist of Italian pictures in the time of Charles II., and Anne Killigrew, who is now best remembered by the praise of Dryden.

In the eighteenth century we find the names of Mary Williams, and Anne Lee, a painter of flowers, insects, and shells; of Angelica Kauffmann and the Honourable Mrs. Damer. Miss Cosway's portraits and Mrs. Mee's miniatures are almost within our own memory.*

In the present century Mrs. Charles Pearson and Mrs. Carpenter's portraits were very often quite as good as many of Sir Thomas Lawrence's, and Miss Heaphy has left us some portraits in water-colour, almost as graceful and, perhaps, more truthful than Chalon. Miss Setchell's "Momentous Question" made for the artist as sudden a reputation as that of Miss Thompson; and Miss Fanny Corbeau's pretty water-colour drawings pleased most of us a generation ago. Miss Sharpe occasionally elevated sentimentality almost into real sentiment, her beautiful picture of the "Bridesmaid," for instance, being quite equal to the literary sentiments of the day.

Miss Chorner in Rome for many years must have reproduced more "Madonnas" and copies of the *Cenci* and the *Esperanza* than any copyist has ever done; and Miss Kate Salomon's beautiful copies of the old masters can scarcely be too highly commended.

Miss Landseer many years ago painted dogs so well that as time passes on they may be mistaken for the works of her famous brother; but Miss Landseer's dogs are not equal to those of Miss Louise Swift, who represents the animal with unusual skill. Madame Bisschoff is now one of our most promising lady painters, and year by year we may expect from her still better work. After the Crimean War the world (not in society) was made acquainted with and was delighted and astonished by the beautiful drawings of the Marchioness of Waterford, and of Victoria, the Crown Princess of Prussia, who has been admirably taught, and works with all the care and regard to details that mark the true artist.

In the present day, lady artists happily and agreeably abound: the Misses Mutrie and Miss Coleman's flower-pieces are always beautiful; Mrs. Ward's pictures are known far and wide; Mrs. Alma Tadema and Mrs. Bridell-Fox are well-known names at our annual exhibitions; and Miss Hilda Montalba and Miss Starr advance year by year. Some little time since we used to see lovely drawings in novel and beautiful tones of colour, by Miss Spartali; and Miss Thompson has made a military fame of almost unenviable notoriety. Mrs. Jopling's pictures and portraits are positively charming; and Madame Bodichamp, Mrs. Marrable, Mrs. Fenessey, and many other names recal to our memory recollections of excellent work. Old lovers of lady artists will remember years ago the enormous pictures of Mrs. Annersley, who, however, studying as she did, and working truly "from the model," can scarcely be considered as a professional artist.

We do not know whether we are quite at liberty to speak of Mdme. V. as an admitted artist, but our exhibitions would certainly gain in intellectual attractiveness by the work of a mind so eminently artistic. Three or four years since there appeared at the Dudley some beauti-

* We have not the work at hand, but we fancy that in Cunningham's "Lives of the British Painters" he has ungallantly omitted the name of any lady painter; but forty years ago the feminine intellectual movement did not reach the wilds of Pimlico.

ful drawings by Miss Eastlake, a niece of the agreeable writer on "Household Taste," but we no longer see her name in the list of lady artists. Women sooner than men appear to forsake the real sources of happiness to be found in the pursuit of art for the means of felicity that unquestionably exist, but are sometimes not discovered, in marriage.

Ladies sketch from Nature with much skill, but their pictures or drawings often appear as if women were deficient as painters in that blessed patience that they never fail to manifest in other things.

Our illustrated papers have some valuable lady contributors, and week by week we see in the pages of *Punch* the spirited sporting sketches of George Bower. It is some years since we have seen the beautiful work signed "M. E. E.," but, considering the proverbial constancy and truth of women, we must confess they work, as artists, somewhat capriciously.

America has not been strong in lady artists; Gilbert Stuart, one of the best portrait-painters the world has seen (a pupil of Sir Joshua by the way), left two daughters, who in 1850 were living in Newport, Rhode Island, and working industriously, successfully copying the portraits of their famous father; but their knowledge of art appeared contracted and limited by their beautiful devotion to their father's memory.

Miss Hosmer's reputation can scarcely be called artistic, that young lady appearing more ambitious of sporting fame; but she has her admirers. Miss Stebbin works earnestly, but the social climate of Rome is enervating, and professional assistants are not difficult to obtain in the Eternal City.

Mrs. Hugh Cholomondley, an artist in more ways than one, has exhibited in England at least one work, her "Venus vanquished," which was a bold attempt, and she is doubtless at this moment preparing in her Venetian studio to again astonish and please her friends.

Australia also has her lady artists, but we can only recall one name, Miss Ironside, who for a year or two gained, in Rome, an extraordinary renown: Gibson praised her, and all visitors to Rome, of course, thought that they must do the same. Her designs at times approached the beautiful, but she failed in her attempts to carry out her dreamy thoughts, and her picture at the Exhibition of 1862 was pronounced a failure. The young lady, alas! died soon after in her beloved Italy.

QUARRIES AND BUILDING STONES.

IN one of the volumes on "British Manufacturing Industries," to which we have recently referred, there is a chapter on quarries and building stones, by Professor Hull, F.R.S., Director of the Geological Survey of Ireland, in which he treats of granite as a building stone. If a piece of granite be examined, it will generally be found to consist of crystals of felspar and mica in silica (or quartz), the silica being in quantity from 65 to 80 per cent. of the whole. The silica appears to have been the last to solidify, but as it is the most difficult to fuse, it is inferred, says the author, that some other agent was present, such as water at high pressure and temperature, owing to which the silica was retained in a state of plasticity, until the felspar and mica had opportunity to enter into a crystalline state.

Granite in various places varies in composition. Some granites contain four compounds, some five, as silica, two varieties of felspar, and two of mica. When two felspars are present, as in some of the granites of Galway, Donegal, and Aberdeenshire, they consist of orthoclase and oligoclase; or, as in that of the Mourne mountains in Downshire, of orthoclase and albite. When two micas occur, they are generally black and grey varieties, as in the granite of Wicklow.

Many of the granites are exceedingly tough and hard; but, in some places, owing to the decomposition of the felspar or the mica, they are quite unfit for building purposes, and close observation of the natural exposed surface of the rock is very necessary, in order to see how it has withstood the weather. A cubic foot weighs about 166 lb., its specific gravity being about 2·6. It contains from 0·5 to 1·3 per cent. of water. A cubic yard, therefore, which weighs two tons or thereabouts, contains about 3½ gallons of water, and is capable of absorbing about a gallon more. The strength of granite to resist fracture by crushing varies much,—say, from 2 to 5 tons per square inch; but if it is well selected in the quarry, it will probably be, in every case, strong enough in practice. That which gave way under fire in America was probably not well selected.

Of limestones, there are five chief formations, viz., Devonian, Carboniferous, Permian, Oolitic, and Cretaceous. Of these the Carboniferous, or mountain limestone, is not used for building, except near the quarries, being generally of a hard, shelly, or crystalline nature, and not of a pleasing colour for street architecture. The great mass is made up of stony shells and skeletons of marine animals, often in a broken and fragmentary state, and bound together into a solid mass by calcareous cement; but although the bulk of this stone is not used for building purposes, there are many parts which yield a beautiful marble, which is polished at Ashford, Bakewell, Derby, and other places. Neither is the Cretaceous formation, or chalk, much used for building; and the Devonian limestone is chiefly used for ornamental purposes; thus of the five great formations two only yield building stones of much use, viz., the Permian and the oolitic. The Permian is well known as the magnesian limestone, or the dolomite of the north-east of England, and is of a yellowish colour and easily worked. This stone ranges from Nottingham to Tynemouth, but the range is interrupted for a short distance near Northallerton. Near Mansfield it is separated into an upper and a lower division by the interposition of marly strata, and contains a large proportion of silica,—about one-half of the whole quantity; carbonate of lime, 26½ per cent.; carbonate of magnesia, from 16 to 18 per cent.; iron, alumina, 1·32 per cent. in the white stone, and 3·20 in the red. But the Mansfield Woodhouse, and Bolsover stone contains only about 4 per cent. of silicate, and approaches more nearly to a pure dolomite. On the whole, the magnesian limestone is subject to much variation in mineral composition.

The oolitic limestone ranges from Dorsetshire into Yorkshire, through Somersetshire, Oxfordshire, Northamptonshire, and Lincolnshire. It lies between the lias and the cretaceous rocks, and consists of four divisions:—The inferior oolite; the Bath, or great oolite; the coralline oolite; and the Portland limestone. These divisions are separated by great beds of clay. The stone derives its name of oolite from being composed of little spherules of lime, either hollow or enclosing a grain of sand or fragment of shell, bound together by a calcareous cement. The lowest division, or inferior oolite, is chiefly developed in Gloucestershire.

The Bath stone is the best known of the oolitic freestones. The principal quarries are at the Box escarpment. The weather bed of the quarry is described as being generally used for plinths, string-courses, cornices; the "corn grit" for dressings; while the "scallet," which is the finest in grain, is used for ashlar. An average analysis of Box Bath stone gives 94·52 per cent. of carbonate of lime, 2·50 of carbonate of magnesia, 1·20 of iron and alumina, and 1·78 of water and loss.

The stone from Tainton and Burford was largely used at Oxford in structures belonging to the twelfth and three following centuries. The more modern buildings have been constructed for the most part of Headington stone, belonging, says Professor Hull, to the coralline oolite, which is of inferior durability.

The shelly oolitic limestones quarried at Barnac, Ketton, and Casterton, in Northamptonshire, and at Haydor and Ancaster, in Lincolnshire, formerly considered to belong to the Bath or Great Oolite, are now classed by some geologists with the inferior oolite. This kind of stone has been used in Lincoln Minster and other beautiful ecclesiastical structures in that part of England. Wollaton Hall and Belvoir Castle are also examples. Byland Abbey, of the twelfth century, is a good illustration of the Yorkshire oolites.

Portland stone is nearly pure limestone. It is denser than the oolitic limestones, weighing from 135 lb. to 147 lb. per cubic foot. To this series belongs the well-known Caen stone, obtained from quarries in Normandy. It has been used in England from the time of the Norman Conquest, and in Ireland from a possibly still more remote period. It is not to be trusted for external use in England at the present time. Kentish rag, a calcareous sandstone, is now much used as a building material in London and the neighbourhood, in place of Portland stone. It is obtained from the Lower Greensand formation, the principal quarries being at Godstone, Maidstone, and Boughton.

Of sandstones the Devonian and Old Red formations yield some good building stone of various degrees of coarseness, from the finest grain up to conglomerates of large rounded boulders, and of various colours—red, purple, and yellow, to light green or gray; and sometimes the stone is almost white.

The millstone-grit produces in Yorkshire, Lancashire, Staffordshire, Cheshire, and Derbyshire vast quantities of good building stone for nearly all purposes. Many of the public buildings in Manchester, Leeds, Bradford, Blackburn, and other large towns, are built of this stone. Some parts of it are especially suitable for foundations of engines, piers of bridges, and similar massive work.

The next in importance, if not, indeed, more important still, is the New Red Sandstone formation, which has been largely used for building purposes in Liverpool, Chester, Shrewsbury, Stafford, and generally in the central counties. This great geological formation has two divisions, the upper being called the Keuper and the lower the Bunter sandstone. Along the high ridge of Everton, Kirkdale, West Derby, and Roby, near Liverpool, the lower or Bunter division affords a good stone of light Brownish red, but in general this division does not yield useful building stone, being either too soft or too pebbly. A better stone is obtained from the lower portion of the Keuper division, which has been extensively used in the older ecclesiastical structures of the central and western counties. The formation ranges from the Mersey, near Runcorn, to Grinshill, near Shrewsbury, and is found extensively in parts of Staffordshire, Worcestershire, and Warwickshire. It is generally compact, uniform in texture, easily worked, and of light red, brown, or grayish colour.

SUBURBAN PUBLIC HALLS.

ASSEMBLY ROOMS, KILBURN.

LONDON is sometimes spoken of facetiously as "the village." How unlike in dimensions and character to Goldsmith's "Sweet Auburn"! to which, however, it has, in one respect, a faint resemblance; the City proper is, for a considerable portion of every twenty-four hours, and to a great extent on the whole of the Day of Rest, a nearly "deserted village." Every morning the streams of the day population of London set in from the suburbs, north, south, east, and west, about eight o'clock, rising to high tide at from nine to ten, when the stream begins to abate, and at about eleven o'clock the complement of the day population may be said to be made up, with inconsiderable exceptions.

The process of desertion commences in the afternoon, when City magnates, merchants, bankers, brokers, agents, financiers, professional men, *et hoc genus omne*, with their battalions of assistants, clerks, "officers and servants," become possessed with their intermittent "home-bound fancy," and for a few hours after four o'clock the exodus continues in dense streams, radiating in almost all directions, and ere midnight brings on the "hour friendliest to sleep and silence," the City is hushed in deep repose. The crowd, the hum, the shock of men," are followed by the "measured beat and slow" of the heavy-footed policeman, who has "ample room and verge enough" for his peregrinations. But sometimes, alas, he is reinforced in the occupation of the otherwise deserted streets:—

"When night
Darkens the streets, then wander forth the sons [and daughters?]
Of Belial, flush'd with insolence and wine."

But, though the places "where merchants most do congregate," and the places where City men and their legions of *employés* carry on business are deserted, the offices and the great piles of building emptied of their day population, the day is not yet done with the crowds who have just vacated them. They have taken home a modicum of life and energy, and have pleasures, perhaps duties, to experience and perform, as necessary to filling the measure of their social life. They, the *employés*, are, *mutatis mutandis*, in the position of Goldsmith's peasants:—

"When toil remitting, lent its turn to play;
And all the village train, from labour free,
Led up their sports beneath the spreading tree."

London clerks, whose homes are in the suburbs, have no "spreading trees" available for their sports or amusements; but they find a public hall an excellent substitute. Such halls are being provided all round London, either by

companies (limited), or by private speculators, and profitable speculations they generally prove, as well as very satisfactory public conveniences, furnishing the means of gratifying a wide variety of legitimate tastes, aspirations, and desires. The usual accommodation provided in connexion with these suburban halls is, a great hall for public entertainments, *soirées*, public meetings, &c.; a minor hall, much smaller, and let at a much lower rent; suites of retiring-rooms for ladies and gentlemen, cloak-rooms, and the accommodation required by the guests at a large social gathering. In some cases class-rooms are attached.

The nature of the successive occupations of these suburban halls is curiously diversified in character. To-night there may be a church missionary meeting, with a member of Parliament in the chair, the meeting addressed by rev. canons and clergymen, the "deputation," and local men of note. To-morrow night this meeting may be followed by a troupe of nigger minstrels, who give a concert "for one night only." A "spelling bee" succeeds, or did, during the little while the absurd novelty lasted. Next may come an oratorio by a local musical association; after it a series of meetings by revivalists of the Moody & Sankey type; then amateur theatricals for two nights; next an "anti-contagious," &c., public meeting, followed by an amateur vocal and instrumental concert. The amateur performers in these local halls, whether votaries of Thalia or Melpomene, of Apollo or Terpsichore, can almost always reckon confidently on having large and appreciative audiences. In the season such halls are frequently used for flower-shows, sometimes for bazaars; and triennially, many meetings are held in some of them to hear addresses from opposing candidates for seats at the London School Board. The *mélange* indicated above is liable to interruption by the proprietor of a peripatetic panorama, who, having had extensive experience, and "knows his way about," concludes that in such a neighbourhood his entertainment will "run" for a month: he takes the hall for that period, and is not disappointed.

Simultaneously with the progress of any of the performances in the great hall that have been indicated, those engaged in a Bible class, conducted under the auspices of the Young Men's Christian Association, or a prayer meeting, or the meeting of a building society, may carry out their proceedings undisturbed in a smaller room.

The most recent addition to the suburban halls is at Kilburn. It is situated quite near the Edgware-road, in the locality where the London and North-Western Railway passes under it. There is only the width of the road between the hall and the railway.

It is a sightly, substantial, and commodious pile of building, that covers 500 superficial yards. The frontage is 75 ft. long, of red Cowley bricks, and dressings of Bath stone; the base is of Staffordshire blue bricks. The front is relieved by three gables and a break in the centre bay. A good deal of ornamental brickwork is introduced with satisfactory effect. The front bears the legends "Town-hall" and "Assembly-rooms." The last title is unobjectionable, but the other is, we believe, quite a misnomer, no "Local Authority" having anything to do with the building, which is a purely private speculation, and not unlikely to prove profitable. It is the property of Mr. T. Bate, whose offices for carrying on his own business are on the ground-floor, to the front, and on the left of the principal entrance. The business announcements in these three front windows are scarcely compatible with the building being a "town-hall."

The entrance-hall is paved with tiles, and is 13 ft. square. The principal stair rising from it is of Yorkshire stone for the first flight, and above that of pitch pine. The large hall is at the back of the building, and is 75 ft. long by 40 ft. wide. The side walls are divided by pilasters into six bays. The room is 46 ft. high, and is lighted by dormers about 4 ft. deep, extending between the ends of the hall, and forming continuous windows. The cornice is dentilled and the ceiling partly coved. The open timber roof, of pitch pine, varnished, is effective. A platform is fitted up at one end, and communicating with it a small retiring-room. For ventilation, inlets are provided at the foot of four of the pilasters. The inlets are covered by panelled boxes, perforated. The colouring and picking out in the hall are quiet and in good taste, somewhat in the style of the Alexandra Palace decorations. The hall is lighted at night by ten star-burners. Provision is made, of course, for the escape of the products of combustion and vitiated air by the roof. Opposite Mr. Bate's offices, on the ground-floor, there is a committee-room, 25 ft. by 20 ft., and 14 ft. high.

On the first floor there is a minor hall, or supper-room, 65 ft. by 20 ft., and 15 ft. high clear; it is estimated that it will seat 150 persons. It communicates with a kitchen in the basement. On the second floor there is one large billiard-room, 45 ft. by 24 ft., and a private or club billiard-room, 24 ft. by 20 ft. The cloak-rooms, lavatories, and closets are all external to the main building. The work in every department is of good character, and combines, with the effectiveness of the design, and the convenience of the internal plan and arrangements, to reflect some credit upon Mr. F. W. Hunt, the architect, under whose supervision the building has been erected. We hear that there is a favourable prospect of the hall being much in requisition for local purposes and entertainments.

PUBLIC WORKS IN MADRAS.

THE extensive and costly harbour works at Madras, in regard to the ultimate sufficiency and utility of which there have been widely divergent opinions among practical men, have again been under the consideration of the General Government of India, and they have instructed Mr. W. Parkes, C.E., engineer-in-chief of those works, to remain for some time longer where he is, and to arrange and initiate a series of observations which may subsequently be carried on by others under his direction, and in his absence. The proposed experiments are intended to test the nature of any movement of sand or action of currents that may be taking place at or beyond the ends of the proposed piers. A recent examination indicated sand in suspension at six-fathoms line in fair weather. It seems highly desirable, in the estimation of the Government, to determine whether the same conditions prevail at seven fathoms. This may probably be effected by placing, during fine weather, some large and heavy substance or object on the bottom, and watching whether the obstruction thus presented causes the accumulation of sand or not. Some such simple expedient might also be devised for testing the currents. Mr. Parkes is himself of opinion that such a series of observations and experiments will take much longer time than the advisers of the Government suppose, and, therefore, requests authority to delegate at once the task of experiment to those who are to remain on the spot and carry out the plan of the works. It is suggested that there may be, under some circumstances, a deep current, and an action on the bottom of the sea not yet ascertained. Such a possibility is admitted, and the desirability of testing it is allowed, but the thing cannot be satisfactorily done except by observations extending over many months, or even a couple of years, so as to include all varieties of seasonal influence. At present, there is not even a surface current. A day or two of steady northerly breeze might produce one, but if, upon examination, it should be found that there was no bottom current under such circumstances, it would not be wise to conclude that there would be none under the more powerful and persistent influences of the monsoons. Such experiments, then, as are proposed can be properly made only by competent persons resident at Madras.

The citizens of Madras have heard with much surprise that the Government have decided on forming a large relief encampment at the Red Hills, near the lake from which they derive their supply of drinking-water. It is also reported that this decision has been arrived at after the sanitary commissioner and the head of the medical department had reported strongly against the project as one that will threaten serious consequences to the sanitation of the city. Perhaps the Government may be of opinion that Madras cannot show a much worse bill of health than she does at present,—the mortality for the week preceding the despatch of the last mail to England having been no less than 94·4 per 1,000. Of course, this high death-rate is due, in great measure, to the invasion of the city by crowds of half or wholly starved people from the surrounding districts, who, in many instances, carry with them the seeds of the disease which so quickly carries them off in such distressing numbers. Considerations of public health demand that these poor sufferers should be at once encamped well beyond the limits of Madras; but why run the risk of endangering the health of the regular inhabitants of the city by forming an encampment at the Red Hills? It would be impossible to keep those people from the fine reservoir of water there; and if that water is only once tainted, who can tell what the result may be among the citizens of Madras who have to drink it? The municipality is expected to take immediate steps against this dangerous proposal. There is not a medical man in Madras who does not condemn the scheme as a most dangerous experiment. It is, no doubt, necessary that there should be an encampment to the north of the city to provide for the crowds which are continually flowing in from the north along the great Trunk-road; but surely some other spot might be selected for its site than the source of the local water supply. It is all the more necessary to keep the Red Hills water pure, since so many of the ordinary sources of drinking-water in Madras have this year failed.

This same subject of water supply is exciting much attention in Madras, in connexion with the present famine; and it is amusing, although sad, to see how little wisdom comes by experience. Here are these people in the midst of another famine, and a question much discussed among them is, "what irrigation works are we to construct or repair?" It is as if their water supply had been cut off, and they were to say, "Oh, come and let us make a new cistern to hold it." In so far as the new cistern gives employment to the poor there is no harm in making it or repairing it; but it never seems to strike some people that cisterns with no water are useless. "We lose our horses, let us build new stables." When really bad seasons come, these reservoirs are full of emptiness. There is only one way of getting water in a bad season, and that is to dig for it; and wells are the cisterns which ought to be hewn out,—not drainage cisterns, but spring cisterns. Large teppacolums, such as the Rajahs used to make, would be works which, if executed in a famine year, would be something to show for the public money, and a lasting benefit to the community. There is no such safe "reservoir" for water as the ground. Dig to a certain depth and you find water. If you can make reservoirs at a high level, and fill them in river freshes, that would be something gained, but then a famine year is always marked by the absence of river freshes. Accordingly, as a rule, there is no work so safe, in such a country as India, as digging into the ground. In the midst of the drought and the consequent scarcity there is no good in repairing either pond or tank, so far as the present is concerned. Water must be found now for the people, and if time is lost and money frittered away, there may be a famine of water as well as of bread. This, many of the wisest men in Madras are beginning strongly to feel, and hence not a few are earnestly desirous that at least a portion of the labour of the "relieved" should be expended in the digging of wells. To a small extent only these large wells might furnish water for irrigation; though the oftener water is drawn from a well the sweeter it is; but the object now is water for the people to drink. There are magnificent works of this kind in Bellary and other districts. A large surface excavation is needed, and then the sides are in steps to the centre. The stone facing is very expensive; but that might be deferred, and charitable individuals could add it afterwards. Sometimes the people might subsequently do the stone work by subscription; but such excavation would, in itself and in the meantime, be good relief work for the people in their own town or village, and would be a permanent advantage afterwards. In some districts there will be thousands and tens of thousands to support, and much State money will need to be spent. Sinking well-shafts is a work which can only be well done by a special set of men; but every large stepped well will employ some hundreds of unskilled labourers for a month or two; and then these spring reservoirs can be pointed to with grateful pride, not indeed as having irrigated the land to any material extent, but as having kept soul and body together, which cannot be done without water to drink, and as having been dug by the people themselves when they were suffering from famine. Those are sagacious men, men who are actuated by a far-seeing benevolence, who advocate such a work of present relief. Of road-making there must be a limit, but of these reservoirs there need not be so long as there is distress to meet. It is well in this matter to take a leaf out of the book of the former native rulers of the land, and in such a respect as this to do as they did. The present cry is,—"The

railways may bring grain, but who will supply water?" Here is a mode, both of water supply and of famine relief.

THE NEW DOCKS ON THE CLYDE.

THE construction of the Stobcross Docks, the important undertaking which is being carried on by three separate contractors, under the direction of the Clyde Trustees and their engineer, Mr. Deas, is now being rapidly proceeded with, and it may not be uninteresting to furnish a brief account of the present position of the works. The dock will include 33½ acres of water-space and 27½ acres of quayage. The northern boundary is formed by the new Pointhouse-road, the eastern being near to Finnieston-street; on the west is the Kelvinhaugh-road, while on the southern side is the river, sheds, roadway, and quays. Projecting into the eastern end of the basin for about 600 yards will be a centre pier, 195 ft. in breadth, dividing that portion into two water spaces, the one on the north being 270 ft. broad, and that on the south 230 ft., leaving an outer basin 695 ft. in width at the west end of centre pier (where is to be found its greatest measurement), and 1,000 ft. in length. From a point in a line with the termination of the pier the south wall of the basin curves in a north-westerly direction to one side of the inner end of the entrance, while the north wall bends south-westwards to the opposite side, the basin thus narrowing to 300 ft. The entrance is 100 ft. wide, and a quay of 208 ft. forms the westerly end of the basin. The length of the north quay wall will be about 1,000 yards, the foundation for nearly 750 yards being boulder clay and rock, about 300 yards being already built. The height of the wall is 42 ft., and its foundation of 18 ft. in breadth rests on concrete blocks 2 ft. in thickness. At the level of the copestone the breadth will have been gradually diminished to 6 ft. 6 in. The total length of quayage will be two miles, and the depth at low water 20 ft. The greater portion of the walls will be based upon concrete cylinders, every one having a cast-iron shoe 4½ tons in weight for its foundation. Of these cylinders, 600 triple groups will be required to complete the work, and they will be sunk to a depth of 48 ft. below the quay level. Each cylinder will be composed of eleven courses of concrete, one course consisting of three, and another of four blocks, placed alternately. The weight of a single course is 18 tons, so that in every cylinder there are 198 tons of concrete and 4½ tons of iron in the shoe. Thus, the aggregate weight of material required for the whole of the cylinders amounts to the enormous sum of 364,500 tons. For the purpose of forming the concrete blocks a piece of mechanism, the efficiency of which is only equalled by its simplicity, has been brought into requisition for the first time in Scotland, and is very successfully applied for mixing the material. This latter consists of Portland cement, gravel, sand, and stone, the last being broken into pieces of nearly equal size by means of a small engine, which is driven by the same machinery as the concrete-mixer before mentioned. When sufficiently amalgamated by water alone, the mixture is deposited in wooden moulds of the required shape, and in a few days the blocks are ready to be lifted and swung by the cranes into permanent position. The blocks are moulded round a circular space of 5 ft. 9 in. in diameter, and the edges of the vacancies when brought together in building the cylinders form wells, from which conical diggers extract the soil by half tons at a time, the cylinders meanwhile slowly sinking under the pressure of many tons of superimposed iron rings, which are increased in number as the cylinder descends and the resistance to its downward course augments. Among the supplementary machinery employed in connexion with the dock-works, may be instanced the patent derrick cranes, having a lifting power of 10 tons each, and easily controlled by a single workman, and which, besides performing all the ordinary operations of a stationary machine, travel, with all their appurtenances, in any direction which may be required. Small and compact locomotives, but of powerful capacity for their size, are employed to draw loaded "bogies" to the mixing machines, and to perform work in various other branches of the works, these being in addition to the ordinary sized engines and ballast-wagons to be seen on the many lines of temporary railways intersecting the scene of operations in all directions.

At the excavations for the north wall, Messrs. John Morrison & Co., the contractors for the middle section of the dock, are just now cutting through a bed of boulder clay to the depth of 42 ft., for the purpose of laying the foundation of the wall, and are making use of dynamite to dislodge large portions of the clay at one time. Mr. J. S. Hunter, whose contract for the quay wall at the west end of the dock extended to 1,000 yards, has completed the same, with the exception of about fifty yards, while Mr. John Jackson, contractor for the eastern section, has commenced operations, being employed with the preliminary excavations and bringing forward of the necessary plant. The iron swing-bridge, constructed by Sir William Armstrong & Co., is now in position, and Mr. Hunter has all but completed a handsome block of buildings for the hydraulic machinery, also supplied by Sir William Armstrong's firm. One of the features of the building will also be an ornamental tower with a handsome clock, while one coal crane is already erected on the north wall, a second is in progress on the south, and two more are contracted for from the same firm who supplied the swing-bridge. Considering their magnitude, a year or two must necessarily elapse before the works are entirely completed, and as there will be direct railway communication, already partially established with the rich coal-field and principal seats of industry in the surrounding district, the new docks will be of incalculable advantage in furthering the trade and consequent prosperity of the great metropolis of the west of Scotland.

MANAGEMENT OF SOUTH KENSINGTON MUSEUM.

SIR,—Will you allow an old contributor to the *Builder* to make one or two remarks on your article on South Kensington bronzes and its catalogues. I have nothing of a controversial nature to say against the article. With the greater part of it I fully agree; and I think no subject more important to keep before the eyes of all students of art than the relation which should subsist between material and style. But a question, if I am not mistaken, of wider import than you have raised, lies behind the difficulties you have regretted. I may be permitted to cite an incident which bears forcibly on the views you have expressed. It is now some years ago that I was requested to write certain notices of particular branches of several forms of art which are richly illustrated at South Kensington. I need not particularise what they were. The subject was a fascinating one; and all the more so from the hope that, if wisely and happily treated, the result might become a sort of non-official hand-book, welcome to many a visitor. But, alas! the first chapter was hardly exhausted, and the pleasure of sending over friends to look through one's own spectacles was only on the verge of attainment, when it became, or seemed to become, evident to me that I had made some terrible blunder. I could not recognise what I had been describing on another visit to the Museum. All the land-marks were gone. Every thing was so entirely changed that the account drawn up might as well have been an account of a museum in Paris, so as any utility to the visitor to South Kensington was concerned. The first feeling, as I have intimated, was that of humiliation. It seemed to be my fault. Perhaps some little irritation, certainly a good deal of wonder, succeeded. Finally, I came to the conclusion that there was something inscrutable in the matter, but that, at all events, any literature that took South Kensington exhibits as its theme could only be of the most ephemeral nature.

Your article carries this idea a step further. For it shows that not only has the public writer to reckon without his host if he speaks of any collection, or branch of a collection, at South Kensington, but that even the persons selected by that establishment to write their own official descriptions and catalogues have to suffer from the same causes,—and that no indication given on paper can serve as a permanent guide in the midst of the kaleidoscopic whirl which has become the law of the spot.

Thus far, then, I have found nothing very novel to say on the subject. But the further inquiry which I wish to raise is, what is the cause, and what the effect, of a ceaseless change, which, together with all its annoyance to the student, is productive of constantly fresh pleasure to the sight-seers? In fact, in these words, the question has stated itself. Two opposite functions have been claimed for South Kensington and kindred establishments: one is to teach, the other is to amuse. Is it or is it not the case that opposite conditions are required for these two objects, and that no attempt to reconcile them can be permanently successful?

I fear that this is the case, and I think that this view will be borne out by a comparison of the effect produced on the mind by repeated visits to South Kensington, to the British Museum, and to the Crystal Palace. The more perfectly fitted any special collection is for consultation, that is to say for educational use, the less disposition every one feels to visit it a second, or at all events a third time, unless it be for a directly educational object. Look at the gallery of birds in the British Museum. Some of the specimens, it is true, are old and dusty, but even so they illustrate the specific forms quite as well as many an object of pottery illustrates anything in the history of the art of the potter. To my mind, the knowledge of specific organised forms of the relation of species to species, and of the extraordinary manner in which some wandering species in the Fauna or Flora of one part of the world fills up a gap in a series elsewhere, has a charm which no works of human skill can attempt to rival. As a collection, to persons of my way of thinking, the bird gallery of the British Museum has a deep and abiding interest which no collection of works of art can possess. But, still, we do not go to look at the birds, unless it is for a specific object. As a whole, the long gallery, if seen a dozen times, no more attracts the eye than do the titles of books on a row of shelves. The arrangement is, educationally, admirable, but the elements of novelty, of wonder, and of change are absent. If you go as a student, you may gain priceless information; if you go as a sight-seer, you are intolerably bored.

The same remarks will apply to any other of the galleries of the Museum. Look at the mineralogical collection. What can be more perfect,—what more instructive? What,—when you are in search of light on mineralogical subjects,—more beautiful? But who would ever visit that fine gallery for amusement? Look, again, at the sculpture in the Crystal Palace. Admirable representations are there of the finest statues in the world. Of course, there is a great difference between the marble and its reproduction; and the charm of the great galleries of Florence, Rome, Naples, or even Paris, is not rationally to be expected. But for the educational use of the student of sculpture I think there is a more complete field at Sydenham than in any other gallery I know. Who goes to look at it? Who regards the lovely torso of the Cupid of Praxiteles with more eager glances than he casts at the lamp-posts on the Thames Embankment? Even to the authorities of the Palace these costly and valuable casts seem to represent only so much sunk capital, and the students are few. It would by no means pay to keep up a gallery of casts for their instruction, and for the paymaster, the public,—I will not say the mob,—but the men, women, and children who go for an hour's relaxation and change, a new rag doll swinging on a rope would give much more pleasure than a third look at the cast of the Venus of Milo.

It is my belief that the able men who have directed the arrangement of the courts at South Kensington have long since found out this secret. Having done so, they have held their tongues, and acted on this discovery. They are aware that the kaleidoscope, though only composed of a tin tube, two plates of looking-glass, and a few bits of coloured glass, is an instrument very generally fascinating. They have turned their courts into so many kaleidoscopes, and by so doing they have kept up the number of their visitors. How long this may last is another question. On that I am not at this moment in possession of sufficient data to form an opinion. But I think if we even interrogate our own recollections, we shall find that when amusement, and not instruction, has been our object, novelty has been the very central element of success. It may be said that, if this is true, we must give up the whole long series of prelections about mingling the *utile* with the *dulce*, teaching by the eye, elevating the taste, and so on. Not so, I think, necessarily. As far as direct instruction goes, I think the order of a museum is requisite, and that the change which attracts the public is destructive of the utility of collections for educational purposes. There remains, however, the effect of the habituation of the eye to what is beautiful, and the effect thus produced in the education of the taste. We cannot, however, look for much advantage in this way by

the mere juxtaposition of numerous objects of splendour. The stately rooms of some wealthy persons are crowded with so many objects of costly beauty, each, it may be, excellent in its way, that the effect produced on the mind is like that of going to a broker's sale-room. Selection, order, arrangement,—a certain reserve,—are necessary for the efficiency of the mute lessons given by the exhibition of beautiful objects. It is very questionable whether the heterogeneous accumulation of a large number of costly articles, however beautiful each may in itself be, has not a directly deteriorating effect on the taste, if the assemblage be regarded in block, rather than by the painful labour of individual attention to the several items.

At all events, we require something more than an acknowledgment of the advance made in the beauty of the articles now commonly sold in our shops to prove that the efforts of the past twenty-five years have materially advanced the culture and the taste of the people. One thing certainly has been stimulated, and that is costly luxury. But if we look at the cycle of female fashions, and the point at which they have now arrived, at the decorations and dresses, or undresses, of the theatres; at the introduction of a certain class of adornment and of ritual in our churches; at the dresses, the demand for wages, and the general efficiency of our domestic servants; at the style of address to servants or superiors which young people, and those in inferior situations, so often adopt without check or mitigation; it is certainly open to doubt whether our æsthetic and moral culture has advanced during a quarter of a century of exhibitions. That luxury has advanced with gigantic strides there is no doubt. The advance of luxury in the history of the world has been hitherto coincident with national corruption, and the herald of national disaster. I trust that it may not prove so with ourselves at the present time. But one thing, at all events, I think we shall do well to reconsider, and that is whether the æsthetic centres which at the cost of millions of public and private money we have reared in and about the metropolis exert a wholly purifying and elevating influence on their frequenters, or whether, in the attempt to combine instruction with amusement, we are not in danger of losing the former without greatly advancing the latter. A. B.

DEAD CITIES ON THE GULF OF LYONS.

A SOUTHERN engineer, M. Charles Lenthéric, employed upon a succession of public works along the French Mediterranean coast, thought he had discovered, a few months ago, indications not referred to by previous investigators of places once inhabited, desert creeks which had formerly been ports, and hard tracks across the sand having all the appearance of being artificial. Feeling a strong interest in those semi-wildernesses, as all who have visited them must do, he commenced by exploring them as a geologist, and is concluding by bringing to bear upon them all his artistic and archæological instincts. Certainly, none who have wandered in that direction will wonder at his enthusiasm; but, suddenly, he came upon a world of treasures, often hinted at, and, indeed, illustrated in fragments, but in its fulness unknown. These he has described in a work, just published in Paris, under the title, "The Dead Cities of the Gulf of Lyons." It was, he says, the result of curiosity, rather than of pure scientific ardour; he saw things as they were, and wanted to know what they had been; and he even went so far as to predict for them an imaginary future. This last part of his most interesting study may, for the present, be left out of view. We accept his volume for what it is,—not a scientific treatise, not a narrative of travel; not a history, yet containing the elements of all three, and singularly interesting. The French coast of the Mediterranean, as M. Boissier has well remarked, is separated into two distinct and unmistakable divisions, presenting contrasts such as are to be met with in few other parts of Europe,—the one a garden, the other a blank. From Genoa to Marseilles, all is life, brilliance, and beauty, knowing no winter, scarcely knowing ill-health, free from the presence of poverty; from Marseilles to the Spanish frontier, on the other hand, all is solitude, depression, and desolation. It was into this unpromising region that M. Lenthéric carried his spirit of research, convinced that the neglect of ages had hidden there not a few secrets from the modern generations of mankind. Geologist he was, and in that character we are not concerned to follow him; but his geological habits induced habits of digging also, and he speedily found that he had to deal with ruins as well as rocks; he also noted how the changes of the earth accounted for these extraordinary changes along the borders of the sea. There unquestionably existed, upon the coasts of that vast gulf, cities of which the natural situation gave them a great command of commerce, and among them, although nothing beyond a shadow of it, shifted to a different position, survives Narbonne. This, in the Roman epoch, enjoyed a direct communication with the sea; it was encircled, like Venice, by a many-branched lagoon, studded with wealthy islands. It had its Grand Canal, burdened with big ships of commerce, crowded with triremes of the Imperial fleet, and bordered by sumptuous quays. Upon these, every one of which was an example of architecture, were heaped the riches of the East and West; but what did M. Lenthéric see? A lake dried up; a coast-line receded, and nothing left except a skeleton. Therefore he counts it among his "Dead Cities." Next he presents to us a picture of Arles, which, after Dax, is the most Roman of the Roman cities in France, and this also stood at the head of a semi-inland sea, around whose embankments an indescribable activity once reigned. It was, in its way, a sort of French Alexandria, having two ports—one to receive the great ocean-coming ships from India and the more distant East, another to afford anchorage to the thousand incessantly going and returning craft of the Durance and the Rhone, which put her in direct relation, indeed, with Lyon and all the rest of Gaul; besides which huge flat flotillas were perpetually fringing the outskirts of these peopled waters, until the very waters were sucked away, so to speak, and left a Clusium where there had been a Carthage. There are other more dreary relics, however, at Maquelone and Aiguesmortes, where the cities of old are absolutely dead: where they could not be more literally so did they lie buried at the bottom of the Dead Sea. Nothing left of them except a few stones, half sunk, here and there in an immense arid plain, varied by rare patches of verdure, upon which half-wild horses and oxen feed. And nothing, it seems certain, can be done to redeem these "Dead Cities of the Gulf of Lyons." Arles, Aiguesmortes, Narbonne, and Frontignan can never again be seaports, attracting all the mariners of the Levant, although the olive and the vine, at some future far-distant day, may take their place, while as for the actually swamped or buried towns, they must remain for ever ten times more invisible and uninhabitable than Pompeii. Still, even from them are brought, occasionally, relics upon which antiquaries have seized as favourable to a contested theory. Thus, from that far coast, and from beneath shifting waves of sand, one of the learned lately sent a number of tiles, which, according to him, demonstrated that the art of chromo-lithography was not unknown to the ancient. His discoveries included an ivory slab, variously tinted, bearing out, in his mind, two texts from Pliny, and an isolated passage in Cicero; two cylindrical stones, the one fitting vertically upon the other; a collection of portraits on different metals, which have evidently, by we know not what process, been multiplied, and so forth; and an inscription setting forth how a certain Atticus had called his friends together by what, in modern days, would be styled a circular. We must confess, however, to distrusting the palæographs of these extinct centres of population. Such might be sought for in the neighbourhood of Rome, or Athens, or the Etruscan cemeteries; but they present a spurious aspect when brought from the sandhills of Southern France. It is far more likely that they belong to the comparatively recent chronicles of Arles and DAX; or they may have been imported thither at a time when Dax and Arles were, as children, expatriated by their great parent on the banks of the Tiber. Nevertheless, none of this discredits the labours of M. Lenthéric, who has carried on valuable investigations, which will, in all likelihood, be productive of still more rich results. Even now, we have not mentioned the little medals in gold, silver, copper, ivory, and bone, to which no particular meaning can be assigned, but which have been disinterred in considerable quantities. They appear to possess a greater antiquity than the ruins beneath which they were discovered. But the whole field is one of which no more than a single corner has yet been ploughed, and the records of the investigations, up to the actual time, are very disjointed and scattered. It is difficult, indeed, from the mass of "memoirs" and "communications," to discriminate positively between the facts and the anticipations as they present themselves to the French archæological mind; the volume of M. Lenthéric is so enveloped by criticisms from every quarter of the jealous world in which art, and science, and speculation live, and move, and are, that it may be wise to wait for his further explorations among the cities of the dead before levying a tax upon dates, traditions, or theories.

GLASGOW NEW CLUB BUILDINGS.

THE committee of the new club, which at present occupies on lease a portion of the Scottish Widows' Fund premises, at the corner of West George-street and Renfield-street, have decided to erect a new and handsome club-house, on ground recently acquired by them, at 146 and 152, West George-street, and thus we are to have in the immediate neighbourhood of the New Stock Exchange, Merchants' House, and Crown Halls, a fresh addition to the palatial structures which at present adorn that locality. On the decision of the committee being arrived at, competitive plans were invited from five leading local architects, the successful firm being Messrs. Campbell Douglas & Sellars, the latter gentleman, with a view to embody the most recent improvements, and render the accommodation in the new building as luxurious and complete as possible, having visited and inspected the most important club-houses in London. The new premises, which are to be commenced in May next, will be in the modern French style. There will be a front elevation to West George-street of five stories and attics in height, and eight windows in length, while the interior arrangements will include dining and reading-rooms, apartments devoted to billiard and card-playing, and no fewer than twenty bedrooms. The cost of the new premises is estimated at between 20,000*l.* and 30,000*l.*

HOSPITAL FOR CONSUMPTION, BROMPTON.

PROPOSED ENLARGEMENT.

THE importance of the following letter is considerable:—

"Sir,—You are probably aware that the authorities of this important institution are about to erect an additional building on the south side of the Fulham-road, opposite to the present one, to afford the increased accommodation so long and so urgently felt.

The public, who have so liberally supported this hospital for many years, will look, like myself, with much interest at this further development of the resources of so admirable a charity, and will naturally expect every effort to be made to render the new building a model of modern hospital construction. I am therefore surprised to hear a report to the effect that it is the intention of the hospital authorities to instruct their surveyor to prepare plans for this new building! Surely, Sir, this institution should not be behind others of a like kind in endeavouring to secure, by the usual method of limited competition, the services of an architect of repute and experience in similar undertakings, in order that the public may feel satisfied that the new buildings will possess every advantage of construction and planning that modern progress can supply.—A SUBSCRIBER."

We know nothing more of the matter than our correspondent tells us, but have no hesitation in saying that if the Hospital Committee neglect to obtain the best possible advice in erecting their new building they will sin against the community. A very large sum of money has been placed at their disposal for the benefit of the public, and they ought to consider themselves bound to take every available step to ensure the construction of a hospital in accordance with the widest knowledge. In such a case as this four or five competent architects, known to have paid special attention to the subject of hospital planning and arrangements, should be invited to prepare designs, an honorary fee being paid to each, and the author of the most satisfactory project employed, on the usual terms, to carry it into execution.

The Portland Stone Trade.—The local newspapers describe the business in the Portland stone trade as being "very fair" at present.

STREET ARCHITECTURE, MANCHESTER: 62, KING STREET.—MESSRS. PENNINGTON & BRIDGEN, ARCHITECTS.

STREET ARCHITECTURE, MANCHESTER.

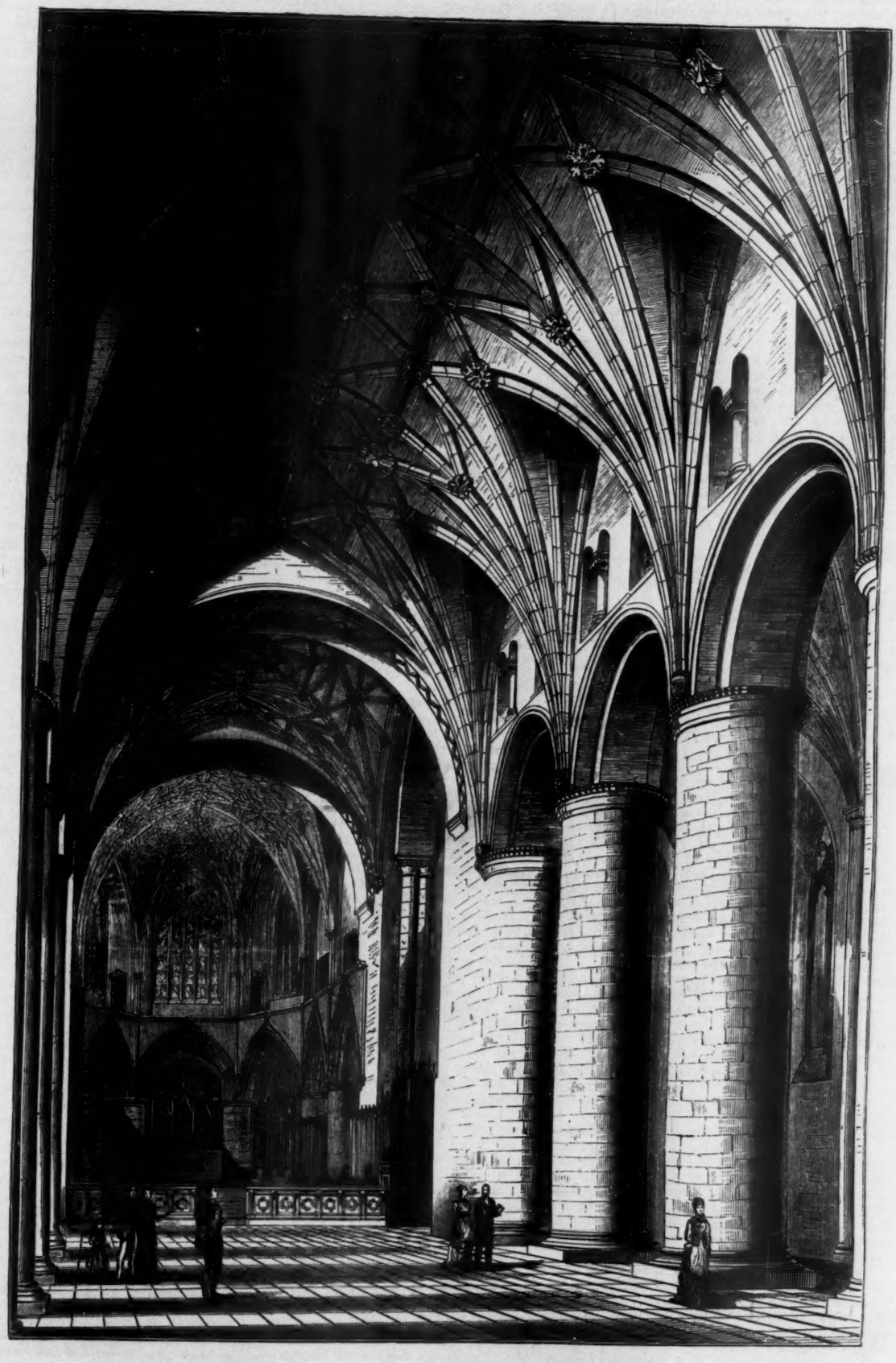
THE shop-front, No. 62, King-street, Manchester, which we illustrate in our present number, is now nearly completed, under the superintendence of Messrs. Pennington & Bridgen, architects. The building has a frontage of 24 ft. to King-street, and is a parallelogram on plan, extending backwards to South King-street (where it has a front of a more simple character)—a depth of 76 ft. A well-hole for light is formed through the floors, in the centre of the block.

The architecture is of almost Flamboyant character, and a large fleur-de-lys is introduced in the lines of the tracery of the gable-window.

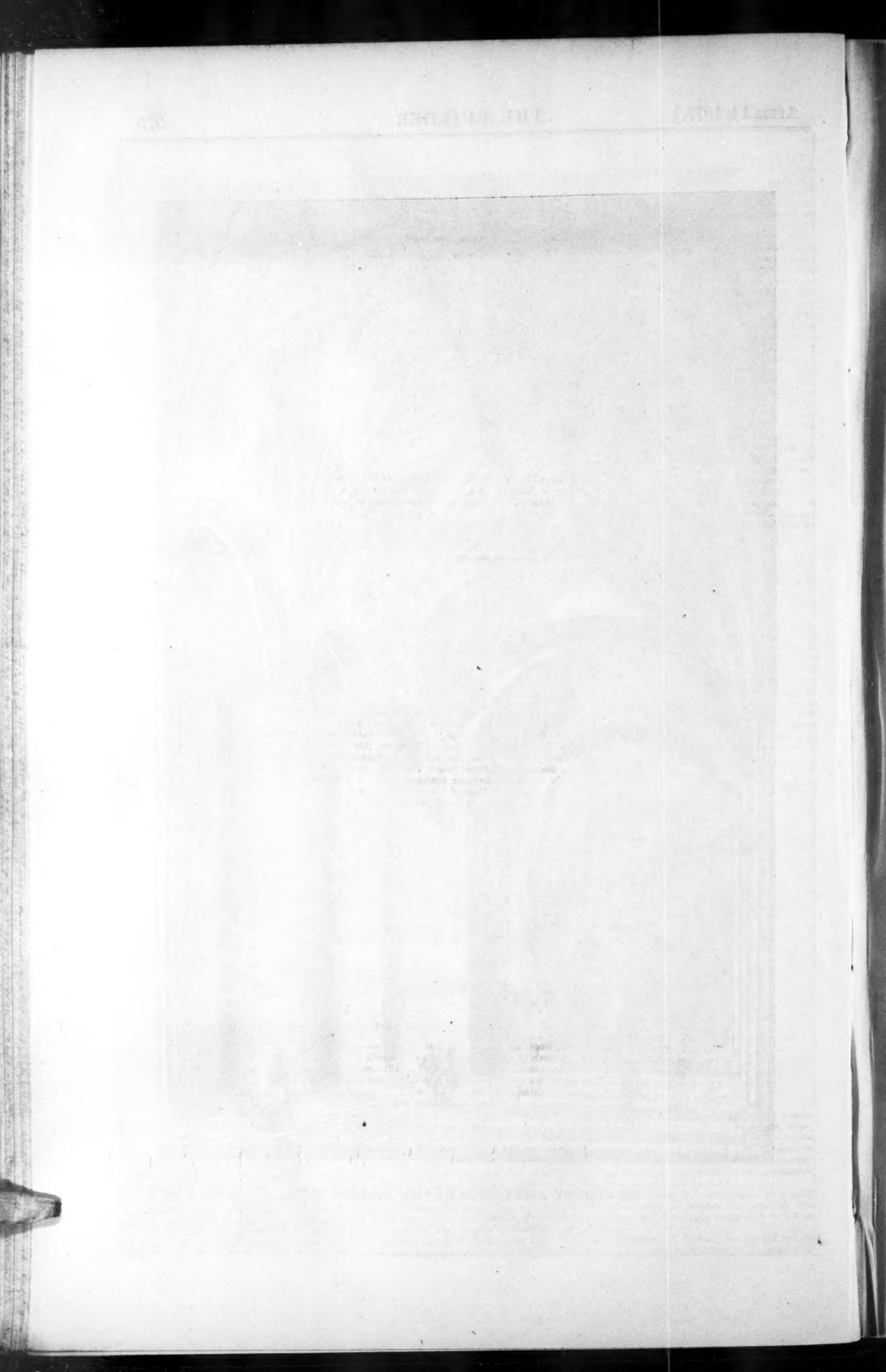
The whole of the ground-floor is executed in polished red Shap granite, and the centre portion of the composition projects boldly therefrom on a curved line flanked by angle-shafts, which run through the eaves cornice, forming a gable with pinnacles. The eaves cornice, angle-shafts, pinnacles, and coping to gable are executed in red Mansfield stone, and the roofs covered with deep-red plain tiles, which contrast with the Bath stone of the structure, and give an agreeable warmth of colour to the façade, which has an east aspect. The heads of the windows are filled with lead lights, the lower portions with plate glass. The arms of Manchester and Salford are carved on shields in the panels over the second-floor outer windows.

The ground-floor will be occupied as a shop and ware-rooms by Messrs. Anderson & Co., stationers, and the upper floors will be let as offices.

Mr. Southern, of Salford, has carried out the work in a manner satisfactory to the architects



TEWKESBURY ABBEY CHURCH: VIEW LOOKING EAST. [See p. 361, *ante*.



SHERBORNE ABBEY.*

THE Abbey Church of Sherborne, in Dorsetshire, is not very generally known, although it has claims not only from an historical point of view as one of the oldest of our bishops' seats, but also from its being in many respects one of the finest examples of "Perpendicular" work in England.

The church was restored in 1849 and onwards by my father, but he not living to complete the work, the last portion of it, the choir, for which he had left some designs, was completed by his successor, my late partner, Mr. Slater; and being in possession of many of the particulars of what was then done, I have sought to arrange them in a form which may serve as a record of these works.

In examining the church and its history, we find that although our first impression is that we are engaged in the study of a fifteenth-century building, yet we are carried back to a period not only as early as the Anglo-Saxon time of the beginning of the eighth century, but even earlier; for on the site of the church, a long time ago, a portion of a Roman pavement was dug up, with foundations of more than one building resting on it; however, it is in the early years of the eighth century that documentary and architectural history begins. Up to the year 705, Winchester had been the one Episcopal See of the West Saxons after its transference from Dorchester in Oxfordshire, but in that year, after the death of Bishop Headda, King Ina separated Sherborne from Winchester, and created it a distinct bishop's seat for the modern counties of Dorset, Devon, Cornwall, Somerset, Wiltshire, and Berkshire; and he then appointed his relative, Aldhelm, its first bishop. St. Aldhelm was one of the greatest and best men, and one of the first scholars, of that age; he was a great traveller, but settled down as a monk in the abbey of Malmesbury, where he had been educated under the abbot Maidulf, who had founded it in or about the year 640. Aldhelm, in 670, was appointed its abbot, and he refounded and reconstituted the monastery, founding also, and attaching to it, smaller monasteries at Frome and Bradford-on-Avon. St. Aldhelm possessed very great influence with King Ina, and was his adviser in the founding and building of Glastonbury Abbey and its church, that is, the new or "Major Ecclesia," which was then built to the west of that known as the "Vetusta Ecclesia," the, even at that time, ancient wicker church dedicated to the Blessed Virgin, and since rebuilt and called St. Joseph's Chapel. St. Aldhelm was, however, only Bishop of Sherborne for four years; he died in 709, in the little wicker church of Doulting; his body was brought to and buried in his old abbey church at Malmesbury, in the chapel of St. Michael, and by the directions of Egwine, Bishop of Worcester, crosses of stone were erected wherever the body had rested on its journey, and the wooden church was replaced by a stone one by the monks of Glastonbury in grateful remembrance of him. Portions of the old cathedral church of Sherborne, erected in the time of St. Aldhelm, still exist, as does "the little church," built by him and dedicated to St. Lawrence at Bradford-on-Avon. The cathedral of Sherborne was served by regular clergy, not by monks, whose day had not then come, for the monastery of Malmesbury, as then existing, resembled more nearly a collegiate or missionary body of the present day, and was very different to those bodies of monks of the great order of St. Benedict, which in the tenth century extended over Europe. It is now impossible to define the plan of this very ancient cathedral, but as the works would be progressing nearly simultaneously with the "Great Church" at Glastonbury, there would probably be some general resemblance in the two buildings. This church of King Ina's at Glastonbury is explained by Professor Willis to have been afterwards rebuilt on a larger scale by St. Dunstan, when abbot, and then again by its first Norman abbot, because, as William of Malmesbury says, "it did not correspond in magnitude with its revenues." It is possible, therefore, that the early Anglo-Saxon Church at Sherborne bore the same relative proportions to its Norman successor as that at Glastonbury; there is, however, a circumstance which, if it could be quite satisfactorily proved, would go far to indicate that the church was as long as it now is. It appears that in 860, Bishop Ealhstan, of Sherborne, a great military prelate, buried in his church the bodies of Æthelbald and Æthelbert, kings of the West Saxons, and elder brothers of Alfred the Great; and the place of this burial is described by Leland to be "behynd the high Altare of St. Marie Chirch, but ther now be no tumbes nor no writing of them seene;" however, about the year 1840, a coffin of Purbeck marble was dug up in the ambulatory, behind the altar, and removed to the north-east corner, and this coffin is believed to contain the remains of one of the royal brothers.

In the year 998, Bishop Wulsin, of Sherborne, by the authority of a charter of King Ethelred, expelled the secular clergy, and introduced the Benedictine order, and became abbot as well as bishop of Sherborne. This bringing in of the Benedictines seems to have greatly influenced the plan of the church at Sherborne, and the point was enlarged upon by Mr. Carpenter, who referred at some length to one of the peculiarities in plan of the ancient and powerful abbeys of the Benedictine order, viz., the large western porches. The remains of a similar feature have been found at Sherborne. These remains seem to have been so much buried as to have escaped the attention of Professor Willis and others who have examined the building. They have been now, however, uncovered, and there are visible the remains of a plinth or base course of a building 29 ft. wide outside, the centre line of which corresponds exactly with the nave. This ancient porch was pulled down either in Norman days, or to make way for the later Allhallows Church of the fifteenth century, and nothing now remains of it above the floor line of this church. The plinth mouldings, especially the upper one, are of a singular type, indeed almost Roman; and those on the south side are partially embedded in the west wall of the abbey church, which wall is partly Anglo-Saxon on the north side, and Norman on the south.

There is a tradition that the church was injured by Danes and Scandinavian pirates, who, at the end of the tenth century, invaded that part of England; however, if this were so, it is not likely it long remained ruinous, for at a great meeting of the Saxon Estates under Ethelred, at Eanham, in Oxfordshire, 1008, the duty of building and repairing churches was strictly enjoined on the country at large.

Altogether there were twenty-six bishops of Sherborne, the last being Herman, the chaplain of King Edward the Confessor. He united the see of Wilton to Sherborne; but after the decision of a great council under William the Norman in 1072, Herman removed to Old Sarum, and commenced its cathedral. The monastery at Sherborne was, however, continued until 1122 (or 1139 as says William of Malmesbury), when Roger, bishop of Sarum, destroyed the priory of Horton, and annexed it to his priory of Sherborne, which he made an abbey, and consecrated Thurstan as the first abbot, and afterwards, in 1125, Pope Honorius II. conferred large grants of lands and endowments on the abbey.

Roger, the third Bishop of Salisbury, was a notable figure in that period of English history, and he was a great builder. The castles of Malmesbury, Devizes, and Sherborne were erected by him in the reign of Henry I. The castle at Sherborne occupied the site of the ancient bishop's palace, which site had been transferred to the see of Sarum. These three castles are described by a contemporary writer as being "for space very large, for cost very chargeable, for show very beautiful; the stones are set in such exact order that the joints cannot be seen, and the whole structure seems to be but one stone." The ruins of the one existing castle, that at Sherborne, show that this is a fair description. There is little doubt that Roger also helped to build the churches at Malmesbury and Devizes, and he also rebuilt the abbey church at Sherborne with Abbot Thurstan. There is a great resemblance in the details and in the interlacing arcades at the church and castle chapel of Sherborne with work at Malmesbury and at St. John's and St. Mary's Churches at Devizes. St. John's Church is a fine specimen of late Norman work. Its central tower is a grand feature, and, excepting for a late parapet and pinnacles, and some filled-in windows, it remains at the present time as when first built. It is oblong on plan; and while the western and eastern arches are semicircular, the other two are pointed, but have similar details. Both the Devizes churches have square east ends, as that at Sherborne had.

But to return to the abbey church at Sherborne, much still remains of Roger's and Thurstan's work. They pulled down almost the whole of the Anglo-Saxon cathedral, leaving only the western doorway of the north aisle of the nave and some portions of the adjoining walls. This doorway (now blocked up) still exists, and is in the early Anglo-Saxon style, with jambs of "long and short work," rude impost moulding, and a projected label moulding continued down the jambs on to a rudely-chamfered base. A very similar doorway exists in the tower of Earls Barton Church, and at Brigstock Church the label-moulding of the tower-arch returns in a similar manner down the jambs. It is almost certain that we have in this doorway the one fragment of the work of St. Aldhelm and King Ina. Now, it is difficult to say with certainty how Roger treated this west end of the church, but there is an archway of his date existing in the west wall of the south aisle. As I believe, this arch gave access to a much wider western porch than formerly, or a chapel of three or more aisles. This view is strengthened by the fact that the west wall of the abbey church is exceedingly thin, is not faced with ashlar as the other Norman walls, and was not, as I believe, an external wall. This western chapel and all other chapelries in Sherborne and its neighbourhood belonged to the abbot, as rector, the nave of the abbey church being the parish church, and certain sacraments of the church, such as baptism, were always required to be held in it,—a rule which in later times led to serious riots and the destruction of the abbey church itself.

In Malmesbury abbey church, chiefly Roger's work, there is, in some respects, a similarity with that at Sherborne. There were then two towers, which were thus described by Leland:—"Two steples, and one that had a mighty high pyramis, and felle dangerously *in hominum memoriâ*; it stode in the middle of the transeptum, the other yet standeth a great square tower at the west end." Now, the old seal of Sherborne Abbey represents a church with a western and another, or central, tower, and a lofty western porch. There is the vagueness and disregard of details usual in old seals, and I do not think the date is known, yet it seems to show a Norman church, treated in a rather free and easy manner, and gives a general idea of Roger's church. If this is so, it would seem that the western tower may have been raised on the eastern portion of the early porch. There are no traces of this western tower now left, excepting, perhaps, a foundation of great thickness, distant some 20 ft. from the present west end, which may have belonged to it.

Leaving for the present the west end, which presents so many knotty points, we find the piers of the central tower are Roger's work. This tower, like that at Malmesbury and Devizes, is broader from north to south than from west to east. The arches opening into the transepts are narrower than the others. At Sherborne and Malmesbury they are highly-stilted semicircles; at Devizes, they are pointed. The two coupled shafts under the lower order of the arches are identical in detail at Sherborne and Malmesbury. The western arch is of a depressed form, partly due to its original construction, partly to the settlements which have so often put the tower in danger. The heart of the north and south aisle walls are probably of this date, and it is very likely that the core of the nave-piers, cased in later days, is Norman work. The Malmesbury piers are great cylinders, and from the portions of the responds left at Sherborne in the tower-arch piers, it seems as if they may have been so there, but it is, perhaps, more likely they were of square or oblong shape, with shafts like those opening into the transepts from the nave aisles. There are short lengths of the Norman string-courses existing in the north-west tower-pier, which are valuable as defining the respective heights of the abacus, the string-course under the triforium, and that of the clearstory.

There are no evidences of the Norman triforium, but there is a portion of one of the clearstory windows in the east wall of the north transept, which has rich zig-zag mouldings, supported by a shaft with a sculptured capital, in character with those of the south porch. This porch is a very fine example of the date. Its arch-mouldings and groining-ribs are exceedingly rich in detail, as is the inner doorway. The choir and monks' stalls were, as was then generally the case, placed under the central tower.

The external and internal masonry facings of

* Substance of a paper "On the Benedictine Abbey of St. Mary, Sherborne, with Notes on the Restoration of its Church," read by Mr. R. H. Carpenter before the Royal Institute of British Architects, on the 19th ult.

Roger's work are exceedingly well executed in courses of Ham Hill stone, averaging 7 in. to 10 in. high, with close joints. The inside core of the walls and piers, however, was discovered by my father to be no better than the generality of Norman builders' work; and the fall of the central tower of Malmesbury just before Leland's time is thus accounted for. The old roofs were of a higher pitch than the later ones, especially that of the aisles, the slope of which is indicated by a portion of the coping-stone on the inside of the western wall. It must have reached considerably above the sill of the present clear-story window, and the high-pitched roof of the porch would have gone back into it.

In the thirteenth century, at the time of the building of Salisbury Cathedral, the lady-chapel at Sherborne was built (possibly by the same workmen), and Bishop Roger's Chapel (the chapel on the north side of the choir) had its north and east ends rebuilt. The work in the lady-chapel, of which one bay only now remains with its groining complete, is exceedingly beautiful, and the mouldings and carved capitals much resemble the Salisbury work; and, although covered with whitewash (the chapel now forming part of a house), they yet retain their original colour and gilding. Many of the shafts are of Purbeck marble. The foundations which still remain show that this chapel was of three bays. It opened by the arch, now blocked, into the eastern ambulatory of the choir, which was groined in the style of the chapel, as is indicated by the lines in the wall of the former wall ribs, and marble abacus mouldings of the vaulting-shafts.

The changes made to the church in the fourteenth century were singularly few. Only a few windows (four in number) were inserted in the old wall of the north aisle of the nave, called the Trinitie aisle. These were, however, soon blocked up by the building of the cloisters, by Abbot Fryth, about 1360, and the aisle then acquired the name of "the dark aisle"; and, at the end of the fourteenth century, was built the church of All Hallows, adjoining the west end of the abbey, on the site of the west porch tower and aisles. These were all pulled down to the new church floor level, which was some 2 ft. above the abbey church level; they therefore left standing the curious plinth and base of the great porch, just high enough for the pavement to go over it.

The new church was of three aisles of unequal widths, with a narrow chapel on each side, at the ends of the ambulatory, between its altar and the abbey church doors. The aisles were divided by arcades with slender pillars, the responds of which remain against the west wall of the abbey church. The masonry is not equal to that of the other buildings, and the stone is soft. The line of the long low-pitch roof of this ambulatory is still marked on the west wall of the abbey church. The central aisle itself most probably had a clearstory, for there is in the gable of the old abbey guesten hall the springing stones of a flying buttress, which rose up to where the clearstory wall would be; but the roof on the ambulatory would be at the level of the aisles, which were not vaulted, but had curved wooden braces rising from wall-shafts. The north aisle wall of All Hallows still stands as high as the window-cills, and is arranged in a series of shallow recesses. The vicars of this church of All Hallows were appointed by the abbots, who held the great tithes as rectors, and still insisted on baptism being held in the nave of the abbey as the parish church of Sherborne. The vicars seem to have resented this; and on the abbot fixing a small doorway, evidently moved from some other place, in the old and wider Norman archway of the south aisle, where the font was, they made it a cause of dispute, and the old enmity between the regular priests and the monks broke out. Leland gives a full account of this. It seems to have extended over many years; during which the great work of the reconstruction of the abbey church was begun by Abbot Bruning, and his successor Abbot Bradford.

The choir was the first portion taken in hand, and the whole of Roger's work was pulled down to the floor level, and the new work built resting on it. The upper stage of the tower was rebuilt, with a new panelled eastern arch under it, in place of the Norman one, which was altogether removed; the walls of the choir and its aisles, including the springing stones of the groining (but not the groining itself), were carried up, and were temporarily roofed in and thatched until such time as it was considered safe to construct the groining. It was just then that the long-standing disputes between the secular priests of All Hallows and the monks reached a climax; and the priests erected a font for themselves in All Hallows, saying that the doorway into the abbey church was "too strait" for them, and that the monks would ring their bells just at the time when the sacrament of baptism was being administered, and further that the monks had moved the old font in the abbey church to another place. At the Easter processions, when the bishop was present, the case was laid before him, and he ordered:—1. The abbey font to be placed in the old position; 2. That the door should be enlarged; and, 3. That the bells should not be rung till after the sixth hour.

When, in January, 1436, the faculty for this was granted, and the monks replaced the old font and removed that in All Hallows church, the townspeople, aided by the Earl of Huntingdon, resisted and poured into the abbey church, and in the riot "a stoute bucher defacid clene the stone font," and a "priest of All Hallows [says Leland] shot a shaft with fier into that part of the top of St. Marye Church which divided the est part that the monks usid from that the tounsemen usid, and this partition chaunciug at that time to be thakkid in the rofe was sette a fier, and consequently all the hole chirche, the ledde and the bells melting, was defacid. But Bradford, abbot of Sherborne, persecutid this injurie, and the tounsemen were forcid to contribute to the re-edifying of the chirche."

The injury sustained was doubtless very great, especially to the old work of Roger's nave then standing. The choir walls were burnt and reddened by the fire, and are so still, as well as the great tower piers, where the stalls had stood; and the springing stones of the vaults are also much burnt. The flames seem to have specially raged against the east wall of the tower, on which their marks are everywhere visible. The lady-chapel and the porch, however, escaped, as their roofs were lower, and they were protected on the under side by their groining from the flames rising into them. Abbot Bradford, a man of great energy, at once set to work to repair the mischief, and arranged his designs for the reconstruction of the whole church in harmony with the new choir; and, forcing the people to contribute, he at once erected and completed the groined vaults of the choir and its aisles, leaving the old burnt stones to tell their tale of the harm done; and as an additional remembrance, he carved on some of the bosses a representation of a burning arrow. The design of the choir is exceedingly fine, by reason of the strong emphasis given to its vertical lines by running the shafts and panelling down without an interruption from the groining to the floor, and recessing the arcade arch to the plane of the mullions of the windows and running down these mullions, forming a series of blank panels for the triforium stage. Great effect of height is given by this, and by the high level at which the springing of the groining is fixed. This vault is exceedingly beautiful in effect, though surpassed by that of the nave. Neither of these vaults is mentioned by Professor Willis in his most valuable paper read here in 1842; an omission which it is difficult to understand, as they illustrate a type of vault which combines the beauties of the fan and lierne system to a much greater degree than any of the instances he gives. He mentions the vaults of the cloisters and porch at Gloucester, built about this time, as "the work of men of bold and original genius"; and he thinks that to them may be assigned the invention of fan-vaulting. Yet neither in boldness nor beauty of design do these Gloucester vaults equal those of Sherborne.

The choir vault is of rib and panel work. Excepting where the tracery requires to be sunk out of larger stones, these and the ribs are all in Ham Hill stone; and the filling in, originally of tufa, is now in the same stone. The thrust of the vault is supported by flying buttresses and heavy pinnacles. It seems that as the choir included the space under the tower, it was decided to continue the vault through from end to end without a break. So they boldly removed altogether the eastern arch of the tower, and the arcade passage and wall above, as much as was necessary, for a new and loftier panelled arch to be constructed, identical in curvature and height with the transverse rib of the vault (possibly this was done before the building of the upper stage of the tower). The aisles are groined with the same type of fan-vaulting as the choir, but of different design, and where the vault crosses the early English arch of the lady-chapel the fans are supported on pendants. At this time there were added eastward of the transept the chapels called the Wykeham Chapel, and that of the "Sepulchre"; both have fan-vaults. And Abbot Bradford seems to have arranged for prolonging the choir aisles as chapels. These, however, were not carried out by him, but by his successors,—Abbot Saunders and Abbot Ramsam. After Abbot Bradford's death, in 1459, the works were continued by the pulling down of the old Norman clearstory and triforium of the nave, and the refacing of the south aisle and the insertion of new windows; for the refacing of the wall the old Norman moulded and carved freestone, turned with its ornamented face inwards, was used to a very great extent. When Abbot Peter Ramsam succeeded Saunders in 1475, and actively pushed forward his predecessor Bradford's grand plans for the nave, he cut the Norman piers and cased them up, forming an irregular octagon in plan, and treated them in a most massive and solid manner, with continuous panels in both arch and pier. The old irregular setting out of the Normans' work required the arches to be in different shapes, more or less pointed. He then groined the aisles, but possibly from motives of economy he did not use fan-vaults, but lierne-vaults of a very domical form. The superstructure of the nave was then proceeded with, and here Ramsam disregarded the irregular centres of the piers below, and spaced out *equally* the five bays of the clearstory. The transverse arch of this vault is more pointed than that of the choir, and is so designed and executed that it requires no flying buttresses nor any abutment beyond the thickness of the wall from which it springs, and yet it is as perfect as the day when it was erected.

In 1504 Ramsam died, and in little more than thirty years after his death John Barnstaple, the last abbot, surrendered the abbey to the Crown, and it was granted to Sir John Horsey, knight, of Clifton Maybank; however, fortunately, at that time the state of All Hallows Church, for some unexplained reason, was very ruinous, so the parishioners sold its aisles and roofs, and by bargaining with Sir John, bought of him, by degrees, the nearly new and magnificent abbey church and some of the abbey buildings, for the insignificant sum of 230*l.*; and it might be noted that the lawyer's bills for drawing up the necessary agreements only amounted to 14*d.* The domestic buildings of the abbey were at the same time granted to Sir John Horsey. In the centre of the cloister garth, as at Canterbury, was a hexagonal vaulted building, built by Abbot Mere, about 1510; into it water was brought by leaden pipes, and it was used as a lavatory. It was sold to the parish for 10*l.* by Sir John Horsey, and is now re-erected in the town, and serves a like purpose as the covered market-crosses of Chichester and Malmesbury. What is now left of the abbey domestic buildings owe their preservation to some portions having been granted by Sir J. Horsey for the school founded by King Edward VI., and more recently by the gift of other portions of them by Mr. Wigby to the school. Unfortunately, the first governors pulled down two-thirds of the lady-chapel and the eastern chapels, in order to erect their new buildings; however, what was left of the old buildings, including the abbot's lodgings and hall, the guesten hall, &c., have been carefully restored and utilised as school-room, chapel, studies, &c., for the school, under my father's direction. The church being nearly new at the time it was bought, was spared; but either then, or in the days of the Civil Wars, the tombs, of which there were several, were destroyed, and it is a wonder that the whole church did not share their fate, for in 1643 there is an entry in the register:—"Paid for drying a barrel of gunpowder in the Vestry 3*s.*"! The stained glass seems to have survived to a great extent up to the beginning of this century, as it is described by Hutchins in his County History, as having figures and many coats of arms painted on it; the local glaziers are, therefore, to blame for its destruction, as no remains whatever existed when my father reported on the church in 1849.

The central tower piers seem to have given way in early times, for the "Perpendicular" work was carefully adapted to the old settlement; matters, however, got worse when the number of bells was increased, and especially when the great bell, weighing three tons, was presented by Wolsey to the church; it is supposed to be the smallest of the peal from

Tournai, which he distributed to Lincoln, Oxford, Exeter, &c. We have no record of what was done towards repairing the piers until 1828, when Professor Wilkins (the architect of the National Gallery) was called in to advise and report to the parish. His report is a very elaborate and interesting one, and he seems to appreciate the building and speaks about it almost with enthusiasm; some words in his report show in what a "conservative" manner he, even in those early days, would have had the restorations carried out: he says, "In executing all works of repair or restoration, the utmost care should be taken to follow the original forms in mouldings and ornaments; a squeeze in clay may be taken from the most perfect and a cast in plaster made from it, from authorities alone thus obtained the workmen employed should be compelled to copy;" he fully explains how the bells caused the piers to be unequally weighted, and how the weight of the upper stage of the tower was carried by the shafts of the gallery instead of by the outer wall, in which evidences of early settlements then existed. The eastern arch, that inserted by Abbot Bradford, had sunk considerably, bringing with it the east wall of the tower, in which were great fissures. He proposed to relieve the weak walls of the weight of the bells, and transfer it to the stronger walls over the north and south arches, and to carry the bell-framing on two great double cast-iron girders, each pair weighing six tons; these were designed by Mr. Bramah, and being similar, as he says, "to those we made for supporting the large tower over the saloon window at Windsor Castle." The advice of Professor Wilkins was not, however, followed; but, after a fall of a stone from the vault in 1830, an alarm was created, and some works were carried out under a Mr. Percy, who introduced iron bands round the tower, and screwed and bolted up the ribs of the fan-vault to a network of iron ribs above them; he also supported the bell on two strong wood and iron trusses from north to south, thus adopting in principle Wilkins's advice.

In 1848 my father was called in to advise the parish; and in his report he specially drew attention to the serious fissures which had appeared in the choir vaulting, caused by settlements in the buttresses by the removal of the whole of the concrete filling in of the pockets of the vaults. [Wilkins, too, had remarked on this.] Under his direction the nave and transepts were restored, and the great west window lowered so as to get three rows of lights instead of one; "as," he says, "the author of the design of the church would have desired, had not the now destroyed building abutting upon the exterior rendered such a treatment impossible." The south porch was in a most ruinous condition, and had to be taken down; and, in the rebuilding, my father completed the original high-pitch gable and the tops of the pinnacles, instead of replacing the flat perpendicular quatrefoil ornamental parapet; and though this restoration has been questioned, I cannot but think that, as the whole was *rebuilt*, the best course was adopted. The tower then demanded serious attention, especially its old north-east and south-east piers: both were out of the perpendicular; the faces were bulged outwards, and the bases crushed. The foundations in the gravel were found to be perfectly good; but, on boring openings quite through the heart of the piers at different heights (after the erection of centres and shores), my father discovered that they were "filled with rubble work, which *may* have been grouted together, but the materials used for such a purpose have now entirely lost their adhesive qualities, and have become no better than road drift, and the whole work of supporting the tower has fallen on the casing of ashlar work, which has proved insufficient to uphold the burden imposed upon it." This ashlar was "in courses of 6 in., 9 in., and 12 in. in height, and 9 in. to 16 in. on the bed, *without any bond or ties*." In fact, it had the old and oft-repeated defects found in Norman towers, which have resulted in the fall of one after another of them. Professor Willis gives a long list of this unfortunate series of catastrophes. However, at Sherborne, acting on my father's advice, there were at once erected in the north, south, and east arches, and in the adjacent arches of the choir and aisles, solid walls of whole timber in four thicknesses, bolted and framed together, and resting on solid beds of concrete carried down to the gravel. On these rested the centres, which were wedged up tightly to the arches by screw-jacks; so much so, that my father himself was able to move the key-stone of the northern arch. Having, by means of these centres, and the shores and needles applied, gained complete command and support of the weight on the haunches of the arches, the whole of the two piers (excepting the panelled facing under the eastern arch, and the portions of the choir and transept responds) was taken out, and rebuilt in solid coursed masonry, which was previously prepared and arranged in accurately-fitting courses, coinciding in height with the old ones. The result has been perfectly successful. There was not then, nor has there been since, the slightest movement in the piers, or the arches resting on them; and the cost, together with the new bases to the other piers was under 4,000*l.*,—a very different sum to the gigantic cost of the very similar works at Bayeux, which amounted to 33,000*l.* It is, I think, a matter of regret that at Bayeux the architects have rebuilt the piers in courses averaging about 1 ft. 9 in. high, instead of the ancient 7-in. courses. The result in the appearance of the piers is, to my mind, very unsatisfactory; and it is a question if there has been any advantage to compensate for it.

The restoration of the choir under the late Mr. Slater was commenced in 1856, at the sole expense of Mr. Wingfield Digby, of Sherborne Castle, as a memorial to his uncle, Earl Digby. The state of the groining was so insecure that the walls had to be bound together by longitudinal and transverse timbers, so arranged as to carry the weight while the flying buttresses were rebuilt, and concrete laid and inverted arches turned between the foundations of the piers. These great timbers carried the centreing of the groining and a floor above it, so that the whole was readily taken down, repaired on the upper floors, and then refixed at its original curve (the crown of the old vault having dropped 7 in.). This was all completed in three months, at the small cost of 425*l.* The whole fabric of the choir and its aisles was restored, re-roofed, and seated with new stalls, made out of the old oak beams of the choir roof; the ancient stalls were also, of course, refixed. Many ancient tiles were found, and their patterns were reproduced in the new pavement. The stonework of the walls and vaults had been covered with yellow ochre: it is now cleaned, and the rich yellow tone of the Ham Hill stone, tinged in the choir with the deep red marks of fire, has a most beautiful effect, and shows how important for internal effect is the choice of a good coloured stone, and how fine the effect of one grand tone of colour is,—be it grey, like Westminster, St. Ouen, Tournai, or St. Stephen's, Vienna; red, like Chester and Lichfield; or yellow, like Sherborne; and no amount of painting or relieving by grey or varied marbles seems to be nearly so satisfactory or so dignified.

In the discussion which followed,

Mr. Ewan Christian, responding to the call of the chairman (Mr. Charles Barry), said he had never seen Sherborne Abbey Church except from a railway carriage, which did not afford a very satisfactory view. He thought the Institute ought to specially thank Mr. Carpenter for the manner in which he had brought the subject forward. If the Institute had more of such beautifully-illustrated papers it would be the better. He did not quite gather that there was very much ground for what Mr. Carpenter said about the porch; he did not appear to have discovered any very extensive remains. He begged to propose a vote of thanks to Mr. Carpenter.

The Chairman said that, like Mr. Christian, he had not had an opportunity of seeing the Abbey Church, but he wanted to express his appreciation of the great antiquarian research and learning which the paper evidenced, in addition to the careful study of the building. One thing which struck him was the little regard which our ancestors of one generation seemed to have had for the work of their predecessors. They seemed to have carried out alterations and additions to buildings which we should have hesitated to touch. It was often said that we in the present day were miserable hands at construction as compared with our forefathers, but he thought we had no very great cause to unduly depreciate our work. Those who had examined old buildings had found, as in the case under notice, many instances of what was very bad construction. For instance, the cores which formed so large a part of many old buildings could not be approved. Sometimes this bad construction was due to over-daringness; sometimes to what we should deem want of knowledge. The fact was, our forefathers were as weak and as mortal as ourselves, and that in ancient times, as amongst ourselves, there were some good men and some bad men. At the same time, architects of the present day might be said to have one excuse which our forefathers had not: he referred to the multiplicity of labours which the modern architect had to perform,—labours from which, as far as we know, Mediæval architects were free. The "old men" had time and opportunity to elaborate and think out their designs to an extent which we could not hope for in these days when architects were saddled with so much of purely business details.

Mr. Ewan Christian, interposing, said that before the chairman put the vote of thanks to the meeting, he wished to say a word in defence of the cores used by the Mediæval builders. The principle of this mode of construction was good, provided the work was good. At the Bishop's Palace at Winchester there was an exceedingly good specimen of a coarse rubble core of flintwork. It remained in great overhanging masses, without any props or struts. It might not be generally known that all the piers of the nave of Worcester Cathedral were of rubble-work faced with stone, and they had stood admirably.

Mr. Phené Spiers having suggested that certain of the illustrations should be published in the Institute's "Transactions" with the paper, the vote of thanks was carried with acclamation.

Mr. Carpenter, in response, said that he might state that all the proportions of the building bore some relation to an equilateral triangle. As to old work, he had found that, in a church in Northamptonshire, all the work of the Saxon period was as hard as Norman work had the character of being, while the Norman work itself was so much rubbish.

ORNAMENT AND COLOUR.*

THE next point to be considered is the treatment. There are two peoples that have achieved the highest artistic excellence we can conceive—the ancient Greeks, and the Northern Italians of the fifteenth and sixteenth centuries. We may admire the grandeur and magnificence of Egypt, but it is the semi-barbarous magnificence of a half-civilised people. We must be astonished at the creative power, the fertility of invention, and the sublime effects produced by the Moslem Arabs, and the Christian Mediævals; but in neither of the two latter cases was there anything approaching to the exquisiteness of finished perfection.

The Greek sought perfection in simplicity; he sought it in his oratory, in his poetry, in his sculpture, in his architecture, and his ornament, and of the latter we have now only to speak. He went to Nature, and conventionalised and abstracted; he omitted those parts which were unsuited to the material or to the purpose, but he kept the exquisiteness of form and the vigour of growth. Many of you here have been struck by the beauty of form of a flower; have drawn it; and you may even have been willing to submit your drawings to a master's eye; but, for all that, you have felt that the highest excellence of its form, or the vigour of its growth, has evaporated in the process (but not to miss the elegance is an art to which some living artists have attained). You may then have tried to conventionalise this flower for ornament, and then you have found that your drawing from Nature was elegance itself as compared with its conventional representation. You know, then, what study and what a happy genius is required to keep the elegance in its conventional form.

I will give you a remark by a great artist† not long since dead. He was criticising some conventional reeds, and said they were bad. "How am I to improve them?" said the designer. "Take a room by a river-bank where reeds grow, and make studies from daylight to dark for six weeks, stay six weeks longer, and watch for the same hours their motions and their changes, then go home and draw your impressions." It is only by such labour of love that such exquisiteness as that of the Greek can be got, and to such of you as have so ardent a love, I would recommend a thorough study of the figure, not to make you forsake ornament, but to perfect your faculties. You must draw figures with more exactness than you need draw flowers, even if they are only to pass muster. You must more constantly be learning purity, elegance, and subtlety of line;

* By Mr. George Aitchison, B.A. See p. 343, *ante*.
† George Mason.

and you have a wider knowledge to bear on figure-drawing than on anything else, but I would not have you think that there is greater elegance of line in any human figure than there is in some of the more exquisite flowers.

Nothing can be more opposed to Greek than Arab art, and yet Greeks and Arabs shared an equal gift; they knew where to put ornament; how to keep it subservient to the general effect; and how to make the ornament itself both beautiful and attractive. The interior of the mosque of Sultan Hassan at Cairo is so magnificent in its effect, and the ornament is so exactly placed where it should be, that you are tempted to exclaim, "This must have been done by the Greeks after they knew the pointed arch." Arab ornament, taken by itself, is the antithesis of Greek. It is by no means exquisite in form; it is complex in the highest degree. The main ornaments are not unfrequently again ornamented with minute patterns: it has the fatal error of seeming in motion, whereas one of the first requisites of good ornament is that it should have repose. It is almost impossible to classify *any* ornament, but it is especially difficult with Arabian, as it was constantly changing in character, from its first imitation of Byzantine to the fall of the Arabian dynasty. You must remember that it ceased to be purely Arab in a very short time in Spain from 711; less than a century from the Hegira it was Moorish; and it became debased under the rule of the Seljuck and Osmanli Turks; but taking it at the time when it assumed the marked character of what we call Arab art, we may say there are four main schemes of ornament:—

1. Border patterns of intertwining scrolls, not unfrequently two running in opposite directions, on which verses from the Koran are frequently superposed.

2. Circular or rectangular spaces filled with close spirals springing from one stem, and consisting of stalks close together, with flowers and leaves interwoven amongst the stalks.

3. Intricate patterns, mainly of straight lines forming stars, lozenges, and irregular pentagons and heptagons, with the spaces filled in with disjointed ornament.

4. Intricate patterns only, mainly formed on curved lines, the lines formed into stalks and leaves, and certain points as flowers.

I shall trouble you but little more with descriptions, but as we are now greatly under the influence of Chinese, Japanese, and Indian art, it would not be right to pass these over without a remark. The Chinese and Japanese have virtually the same art, though varying somewhat in form, colour, and treatment, and the Japanese are decidedly more inclined to preserve balance as a principle than symmetry; they keep the main body of the ornament in one corner of a square or in one part of a circle, but so skilfully is it done that the eye is satisfied. There are, too, some of the Chinese oddities carried to excess in Japanese work, which I think detestable,—the accidental sticking of things ugly or indifferent in themselves to other objects. This you may see on a plain cabinet; two or three dice, threads, bits of plaid or chequered stuff, haphazard on it as if they had been thrown at it and stuck, and the representation of a bit of a table-cloth, napkin, or dress that has been hung over a cabinet or box so as to cut off a corner. Though it is difficult to mistake either Chinese or Japanese ornament, it is impossible to lay down any principle on which they worked. I am inclined to think that they acted as some of our manufacturers are said to act who subscribe to the Society for the Propagation of the Gospel and the Peace Society, but also do a good trade in idols and war paint.

The Chinese supplied Europe, Asia, and Africa with porcelain, and however just was the principle they employed for themselves, they were quite ready to sacrifice it if some thing else found a better market; some of their ornament is founded on what we should call proper principles; the whole is spaced out geometrically, the main points or centres are ornamented with flowers proceeding from one stem, and subsidiary stalks and leaves most perfectly fill the intervening space, or the whole intervening space between the main pattern is marvellously filled with dots, circles, chequers, curls, or the like. The art of equally filling a space with a pattern is one of the most difficult, as it is one of the most necessary, arts of ornament. A great deal of Chinese ornament is disjointed, some is as bad as that I just spoke of amongst the Japanese, but rarely so pronounced. You have probably heard of the American architect who turned his Corinthian columns upside down for the sake of originality. The Chinese know as well as any skilful ornamentalist that where there are lines of structure on different planes, as in pottery, they should be treated separately; but either for a market or for the indulgence of a depraved caprice, they will form a pattern on a plate half on and half off the rim, or copy a print that has been stuck on a plate with half the figure on the front and the other half on the back. There is one thing in which the Chinese and Japanese scarcely ever went wrong, or at least until a late period, and that was in their colour; and we must overlook these eccentricities in consideration of the endless variety of design they have given us.

Indian ornament has borrowed much from the Persian and the Arab, and a little from the Greek and the Chinese. A great deal of Indian work is so completely filled with floral ornament that the ground left is a mere line or edging, and even where they leave any ground they have the skill to make the ornament and the space so perfectly equal that they can ornament a sword-handle with a most elaborate floral pattern, and yet if you shut your eyes and grasp it you cannot feel that it has been more than mechanically roughened to give a grip.

I must ask you to strike your pencil through the word colour, for I shall, I fear, barely have time to make a few remarks on what I have already said. I have brought you into a sort of chaos, in which all styles of ornament that were ever used are jostling against one another, but this is the exact position in which we are in the present day, not only as regards ornament, but as regards all the arts of design.

You must have heard the question asked, either about ornament or about buildings,—what do you call this style? Is it Greek, Gothic, Pompeiian, or Moresque? And if the designer declines to class it under any well-known style, he is looked on as a person who describes himself as of no religion,—a rather dangerous person, and to be avoided. Now, this supposes one of two things: either that there can be no more invention, because every form of the beautiful has been used up (as an eminent writer on one of the fine arts has decided), or that invention in the fine arts does not exist; but, truly, it is not complimentary to the arts to suppose the only possible alternative to be that of the rival broomsellers, where one only stole the materials, while the other stole them ready made. A more monstrous assertion can scarcely be conceived than that of supposing all forms of beauty to be exhausted. A nearer approximation to the truth would be that, in the hands of true inventive genius, one plant might be used to give lessons of beauty that might fill the world with more beautiful ornament and building than it has ever seen. I say this advisedly, for who could suppose that the debased egg and tongue could have given rise to one of the most striking architectural peculiarities the world has seen; and yet, if we may believe Owen Jones, the stalactite ornaments of the Moslems was founded on the egg and tongue.

If I may give advice to art-students, my first word would be, remember the eighth commandment,—"Thou shalt not steal." If you will steal, your case is hopeless; you live in the nineteenth century, and if you are to be an artist, however humble, you have to give to people of the nineteenth century some new revelation of beauty; if you feel you cannot do that, then you are not an artist. Practise your skill for your own delight, but get your living in some honest way. Next, I may say, you cannot be an artist unless you love something,—something, too, of the visual beauty of nature.

An eloquent writer, whom I quote from memory, says,—"The base Renaissance architects of Venice liked masquing and fiddling, so they covered their work with comic masks and musical instruments." There were other things they loved and did to perfection; but let that pass. Still, as far as I can see now, no one loves anything. Can any one point to a building, or any ornamental work whatever, of the present day, that could show the love of the artist for any single beautiful thing in the heaven above, or in the earth beneath, or in the water under the earth? The only instance of loving work that I recollect was in a criticism on a provincial town-hall of the last century. "The architect, for some mysterious reason, loved pumice-stone, for he had carved the good solid freestone of the lower story to imitate it; he loved punch and turtle, and ornamented the wall space of the upper story with the soup-tureens and punch-bowls he loved so well when full; he loved figures, for he ornamented the pediment with them. There was a drunken long-shore man offering a red herring on a toasting-fork to a Billingsgate fishwoman in scanty clothing, at the smell of which she was turning up her nose; but this was dignified in the guide-book description as Neptune offering the spoils of the sea to Britannia."

There is another important consideration,—one, indeed, which is as needful as the invention,—the love and skill of the artist, and that is the love, taste, and knowledge of the public. No great period of fine art, or, for that matter, of any art or science, ever existed without there being a public to point the way by its desires, to restrain extravagance by its taste, to appreciate skill by its knowledge, and to honour it by its applause. Art, like the republic of which we have heard so much, is one and indivisible; it is the creation by genius of certain forms of the beautiful within the lines of public taste; and in every true period of art the logic of this public taste pervaded everything. The Greek sculpture, architecture, and ornament were all suited to one another; all were simple, refined, and elegant,—the dress, the furniture, the arms and armour, the jewelry, the pottery, everything that we have were consistent and congruous with one another. Any of you here would feel how incongruous a Chinese joss or a Gothic image would be in a Greek temple. The Mediæval was the same. Every building, every yeoman's house, hospital, monastery, church, castle, tower, bridge, or cathedral was built and ornamented on the same principle, modified by the requirements. Every piece of furniture or of dress was ornamented in conformity to the general taste. A lock or a reliquary was as much twisted and pinnacled, cusped and crocketed, as a cathedral.

Our Methodist forefathers were nearer art than we; they did not find ugliness repulsive (and I do not think we do), but they wanted everything they had to be good, substantial, well made, convenient, sober, and without ornament; they did not mind the gouty legs of their tables; they wanted them solid, and they wanted them round, so that they might not break their shins against the edges. Now here is a principle, then, almost universally prevalent, and if we had it now on that foundation we might gradually impart grace, elegance, and ornament; but what can be got out of people who want flimsy shams, who want a poor imitation of the last thing in fashion, a joss-house to-day, a Gothic cathedral to-morrow, a Greek building next, then an Egyptian, then Renaissance, Indian temples, Queen Anne, Louis Quatorze, or Japanese?

I believe in the usefulness of beauty; it is, next to air, the one great free gift Nature spreads out for the delight and instruction of all; it is as free to the poor man as the rich; and I cannot believe that we do not seriously injure ourselves by our ugly surroundings. Study the beauty of one blade of grass or one flower, learn to appreciate and understand its subtle graces, and you would improve your taste more than by reading all the treatises on art that were ever written. Most things in nature are beautiful, and yet, as far as we know, there is not a particle more than is required for utility.

I believe that what real taste there is in the country tends towards elegant simplicity, and if you would only develop this from the smallest and commonest article, we might work upwards to the highest. What a beautiful thing would a shoe be if it were moulded to fit an uncrippled human foot (supposing such a thing exists in England). Some of you may have seen a Greek greave, and for my own part I have seen nothing more beautiful, and yet it was merely moulded to fit the leg with two lines, and some dots between for the edge finishing. A dinner-knife made to take hold of and to cut would almost certainly be elegant, but this cannot be said for the present clumsy parallelograms of steel and ivory with rounded ends. We might have our crockery elegant in shape, even if it were plain white, and, at least, even if we only got to love a scarlet-runner, we might get some ornament. There is a small band of artists who are trying to teach the public the exquisite beauty of the human form,—Leighton, Watts, Poynter, Albert Moore, Armstrong, and a few others,—and as purity and elegance of form will only harmonise with other things pure and elegant, it might be a leaven to leaven the whole lump, but I fear their teaching is like the voice of one crying in the wilderness.

If I have led one person to learn the lesson

taught by the elegance and simplicity of one blade of grass, and so to avoid and discourage ugliness, tawdriness, and untruth, my lecture will not be thrown away.

A YEAR'S WORK IN A RURAL SANITARY DISTRICT.

A FAIR idea of the nature of a year's work of a rural sanitary authority may be gathered from the following notes of works, operations, and proceedings, either accomplished or in course of execution in the current year, in the rural sanitary district of Alnwick, Northumberland. In the matter of water-supply, the high-lying village of Newton-on-the-Moor has been supplied with spring-water from a spring nearly three miles distant, on the side of a hill at Glantlees. A Government inquiry was held, plans approved, and the works let and executed. The works consisted of a reservoir, built by the side of the spring, to hold 8,000 gallons, and the conveyance of the water, through pipes, by gravitation, down the hill, across the country, and up to the high ground on which the village has been built.

Plans have been also made for the supply of the fishing villages of Dunstan and Craster with water, and an analysis made of the waters of a spring at Spittleford, proposed to be used, and a Government inquiry has been held, of which, however, the results are not yet known.

At Embleton a well has been sunk by the inhabitants for the increase of their water-supply, and the existing well has been repaired.

For Radcliffe Terrace, a colliery village near Amble, where the only water to be had in the dry season is brought round in a barrel-cart, and sold by the pailful, a proposal and plans have been made to convey water from a well at Amble, the estimates for which undertaking are now before the Local Government Board.

And some small repairs have been made elsewhere, such as re-laying water-pipes broken by a steam-plough at Christon-Bank; and the removal of the roof of an alcove, in which the well at Hanxley is placed, to prevent the perpetration of nuisances there.

In the matter of sewerage, Newton-on-the-Moor, formerly without a sewer, has had a new 6-in. sewer laid down throughout the village, to which private sinks and drains are being connected. At the village of High Buston, a new 6-in. sewer has been laid down, to which private drains will be laid. The Board of Trade has approved of a plan submitted for the improvement of the eastern sewer outlet at Alnmouth; and a new 9-in. main sewer has been laid down at Grosvenor-place. For Embleton and Craster, plans of systems of sewerage have been made, and a Government inquiry held, the results of which are not yet known. Sewerage works at Amble, revised, after a Government inquiry, have been let and commenced, the owners of property connecting to them. At Rock Moor House a new system of sewers and drains is in course of execution by the Lord of the Manor. At High Hedgley the sewers and drains have been remodelled; and at Rennington Vicarage, Glanton, and Eglingham, new sewers, drains, and sinks have been laid down.

In the matter of condemnation of houses as unfit for habitation, a house at Embleton has been shut up; a house at Priest's Moor has been pulled down; and notice has been sent to the owner of another at Shipley Mill to amend it.

A polluted well at Amble has been closed; and the owners of the Hocket coal-pit have been required to provide water for the pitmen in their employment and their families.

Private supplies of water by gravitation have been made in a very complete manner at Harehope Farm and Broomhill Farm.

Two parochial committees have been formed and are in operation: one at Amble, the other at Embleton. A lodging-house at Embleton has been examined and bye-laws sanctioned.

At Alnmouth, a depôt for midden rubbish has been made, instead of allowing rubbish to be thrown into the sea and elsewhere.

A large number of notices have been served during the year, ordering the removal of nuisances, &c.

About a dozen structural improvements have been made in the district:—As at Warkworth, where the top of the village has been rebuilt; Field House, where new cottages have been erected; at Shawdon Wood House, where there is a new farmhouse; the toll-gate on the North-road at Alnwick, which has been enlarged; Togston Low Hall, where there are new conveniences; at Stamford, where there is a new farmhouse; at Embleton, where there are more conveniences in the Blue-row; at High Hazon, new privies; Low Hedgeley, new cottages; Bilton, new houses, &c.

Notwithstanding these active measures, and the general vigilance they suggest, fever has occurred at Alnmouth, Broxfield, Warkworth, Heckley High House, Dunstan, and Christon Bank. We can only conclude the cases would have been more numerous if these measures had not been taken; and we can only hope they will decrease, in this and in every other district, as time admits of the more complete administration of sanitary laws.

THE RIVER THAMES.

THE INSTITUTION OF CIVIL ENGINEERS.

AT the ordinary meeting on Tuesday, the 27th of March, Mr. George Robert Stephenson, president, in the chair, the paper read was on "The River Thames," by Mr. J. B. Redman, C.E. He said it was not known whether the Romans or the Saxons carried out the earliest engineering works on the Thames. These were the embankments of the lower reaches, which shut out about thirty square miles of saltings, formerly overflown, but now from 3 ft. to 7 ft. under high-water spring-tides, representing at the lesser depth 70,000,000 tons of tidal water. The tidal column from Teddington to Gravesend was equivalent to 107,544,643 tons, so that the quantity abstracted might be said to be equal to from five-eighths to three-quarters of that volume. If the water were raised 12 in. in the upper reaches, on an average, by the embankments, one-eighth of the quantity would be returned. The low-water equivalent was even more conjectural, but no doubt the low-water *régime* had been deepened, and the course of the river had always been the low-water channel.

The removal of Old London Bridge, and subsequently of Blackfriars and Westminster Bridges, created a revolution in the tidal condition. On the Thames, as on the Tiber and on the Clyde, bridge engineering had been antagonistic to river conservancy. Waterloo Bridge was a case in point at the present time. The systematic removal of the low-water shoals, in addition, had developed the flood and accelerated the ebb, and about 37 per cent. had been added to the above-bridge tidal volume. The result was an earlier and a longer flood, with increased altitude, and a shorter, lower, and greater scouring agent on the ebb. Five centuries back high-water at London Bridge was three hours after the moon's transit; now it was two hours. During the last two centuries the period of flood had been accelerated one hour and a half; and high-water was at present half an hour earlier at London Bridge, as compared with Sheerness, than half a century back. This was mainly due to the removal of Old London Bridge, which had a waterway of 7,300 superficial feet, as compared with 17,600 ft., that of the present structure. This correspondingly impeded the tide, which now flowed higher 12 in. and ebbed 4 ft. lower above bridge than in former years.

The volume of water flowing over Teddington weir was 3,223,125 tons daily. The present daily quantity supplied to the London Water Companies was 542,958 tons, or about one-sixth of the land water. This was equal to 198,179,670 tons annually, sometimes estimated at 250,000,000 tons. The annual outflow of the river was 1,176,440,625 tons, equivalent to 3½ in. of rainfall over the drainage area of 5,162 square miles. An annual rainfall of 24 in. would yield 8,030,597,142 tons; one-fourth of this amount, after allowing for absorption, evaporation, &c., was 2,007,649,285 tons of available water. This, however, was one and two-thirds the actual result, so that instead of 6 in. of annual rainfall being available, not much more than about one-half, or 3½ in. were so, and this was only four times the quantity required for the Metropolitan water supply. The average outflow was equal to from one-sixth to one-seventh of the annual rainfall.

High-water at Sheerness was fixed by Colonel Lloyd, in 1830, as being 2 ft. lower, and low-water as being 20 in. higher than at London Bridge; but the tide now ebbed lower at London Bridge than at sea. Great tides had flooded London from an early period, varying from 3 ft. to 4 ft. above Trinity standard. Pepys mentioned that of the 7th of December, 1663, thus:—"I hear there was the last night the greatest tide that ever was remembered in England to have been in this river; all Whitehall having been drowned." The extreme range at Gravesend was 27 ft. The quantity of tidal water shut out by the Thames embankments was estimated at 365,000 tons; but they had compensated for it by raising the tidal column, and were thus recuperative. If the water surface from Blackfriars to Teddington had been raised 6 in., that would be equivalent to 700,000 tons.

To show the impossibility of providing reservoirs for land water, Mr. Symons had estimated that storage for 714,285,714 tons would be required, equal to from three to four times the daily tidal volume from Teddington to Gravesend. The winter flood of 1875 at Windsor amounted to 33,723,925 tons daily, so that Mr. Symons' estimate of storage would be for twenty-one days of the great flood. The average volume of extreme tides from Teddington to Gravesend was 322,500,000 tons, so that the land-flood water was one-ninth of the tidal water, or rather one-eighteenth during the day. The morning and afternoon tides of the 8th of April, 1874, both rose 21 in. higher at Blackwall than at Gravesend, 10 in. higher at London Bridge than at Blackwall, and at Westminster and at Lambeth 4 in. higher than at London Bridge.

ARCHÆOLOGICAL DISCOVERY IN YORK.

THE *York Herald* of the 24th ult. published the following notes from the pen of Mr. Noble:—

Towards the close of the sixteenth century William Camden, the author of "Britannia," was in this city. In his celebrated work referred to, he states, "I saw in a certain alderman's house, at York, an ancient inscription in these words:—

"M. VERREC. DIOGENES IIIIIVIR.
COL. EBOR. IDEMQ. MORT. CIVES
BITVRIX HÆC SIBI VIVUS FECIT."

The six strokes, the prefix to the word "vir," represent the Latin numeral "sex." The whole inscription may be read thus:—"M. VERECUNDUS DIOGENES SEVIR, COLONIÆ EBORACENSIS IBIDEMQUE, MORTUUS CIVES BITURIX HÆC, SIBI VIVUS FECIT: Marcus Verecundus Diogenes Sevir (or Sex Vir) of the Colony of York, and who died there a Citizen of the Bituriges, made these things for himself during his lifetime."

Dr. Gale, Dean of York, who died in 1702, in an edition of the "Itinerary," gives a sketch of the inscription, and adds the letters "CUBUS," to be inserted after the word "CIVES" in the original inscription, and which appear to have escaped the notice of Camden. At the time when Dean Gale saw the monument it had been removed to Hull, where it served as a trough for watering horses at an inn. The Dean describes the monument as a stone "theca," or chest, 6 ft. long by 3 ft. wide, the inscription being on the oblong side of the stone. This monument was afterwards seen by the antiquary Horsley, who confirmed the Dean's reading of the additional word. The stone has, no doubt, been long since destroyed, which is the more to be regretted, as until recent times, it was the only inscription found within the ancient walls of Eburacum which described that city as a colony.

Biturix, the native city of Diogenes, was situated on the banks of the Garonne, in Gaul, not far from Bordeaux, in the modern province of Berri, a settlement of the tribe Bituriges Cubi. What the office of sevir was is open to great doubt. It was probably a civil, not a military, office.

On Saturday (the 17th ult.), not far from the new railway station, but nearer the banks of the Ouse, was discovered a stone coffin of the ordinary size, bearing the following inscription:—

IVL. FORTVNATE DOMO
SARDINIA VEREC. DIO
GENI. FIDA CONIVNCTA
MARITO.

"Julia Fortunata (or to Julia Fortunata), whose home was Sardinia, a faithful partner to Verecundus Diogenes, her husband."

Few can doubt, on comparing the two inscriptions, but that the name Verecundus Diogenes is identical in both. It is a somewhat strange coincidence that, after a lapse of 300 years, the tomb of the wife should have been discovered, probably near the same site as that of her husband,—let us hope to share a better fate, and to be preserved as one of the many historic monuments of Eburacum. After a lapse of fifteen centuries one can almost realise the sorrow of husband and wife dying in a strange land, far

away from their sunny home near the shores of the Mediterranean.

"Domo Sardinia"—"Fida Conjuncta Marito" is a truly touching inscription. In all probability the husband, himself the son of a slave, survived, and in the last three words was desirous to record that Julia was a lawful wife, and not a slave or a concubine. Sardinia was a possession held by the Romans, but never conquered. On several occasions, within the period of the Roman Empire, revolts took place which resulted in glutting the slave-market of Rome with slaves; and it was after one of these revolts that so many Sardinians were thrown upon the market as to give rise to the proverb, "Sardi venales," to indicate any worthless commodity.

It is satisfactory to know that this monument has been deposited in the York Museum.

NEW CEMETERY AT EXETER.

THE St. Thomas's district cemetery was formally consecrated by the bishop of the diocese, on the 31st ultimo. It occupies a picturesque slope, and an avenue of yew-trees from the entrance to the mortuary chapels will form a pleasing feature when fully grown. The chapels have been designed by Mr. Churchward, surveyor to the Local Board, and are in the Geometrical style. They form one block of building grouping harmoniously together, the church being distinguished from the Dissenters' chapel by a turret. They are built of nobbled and tooled Westleigh limestone, with dressings of Bath stone. The roofs are high-pitched, and covered with Welsh slates, capped with red crestings. They are open-timbered, and of Memel, the principals resting upon Bath stone corbels. All the internal fittings are of pitch pine. The floors are boarded save in the four porches, where Minton's tiles are used. The approaches have dwarf walls, with worked blue limestone cappings. The builders are Messrs. Stevens & Son, of Fore-street Hill, Exeter, and the carving has been done by Mr. Harry Hems. The landscape gardening was planned by Messrs. R. Coltridge & Son. About 3,000*l.* have been expended.

THE ALEXANDRA PALACE AND ITS MISFORTUNES.

THE purchase of the Alexandra Palace and park by the London Financial Association affords another instance of the manner in which public buildings and other undertakings of a like character are sometimes sacrificed. It appears from the statements made at the half-yearly meeting of the London Financial Association, on Monday last, that they have purchased the Palace and grounds at about one-third of their cost, and now that the Palace has been leased and is about to be reopened upon the basis of this purchase, it may be presumed that its future career will be a successful one, although the original owners may be large sufferers. It was stated at the meeting that the entire estate and effects of the Palace Company had been purchased and become the sole property of the Association for the sum of 390,000*l.*, together with sixteen acres of freehold building land for 18,000*l.*, making a total of 408,000*l.* It was added that a very large proportion of this sum could be obtained on mortgage of the estate, and that there would be no difficulty in raising all the money, as an agreement for a lease of the palace and park alone had been entered into, which would pay a good rate of interest on the entire purchase-money, and leave about 250 acres of valuable freehold building land to be dealt with separately. The 390,000*l.* purchase included the whole of the chattels, and such things as the organs, statues, and other fixtures and fittings about the palace. The chairman remarked that he had been told by a very astute valuer that these were well worth from 22,000*l.* to 25,000*l.*, but had cost 50,000*l.* With regard to the outside land, he said that he held in his hand a letter from the manager and valuer of the largest land association in the kingdom, and who said that his valuation of the whole estate of 229 acres was 160,000*l.*, being an average of about 700*l.* per acre. That being the value of the building land at this moment, if they deducted that from the purchase of the Palace and chattels, they had purchased the Palace and Park for a little over 200,000*l.* He consulted the Company's valuers as to what the Palace had cost, and they said 700,000*l.* They had got the banqueting hall, worth 12,000*l.*; the circus, 10,000*l.*; and the race-stand, 16,000*l.*; and the whole of these were included in the purchase-money. As to the cost of the roads and drainage-works, he found that would be 20,500*l.* At the close of the meeting it was made special, for the purpose of submitting to the shareholders the Bill in Parliament authorising the sale of part of the Alexandra Palace grounds for building purposes. The shareholders gave their sanction to the Bill, as did also the shareholders in the Muswell Estate Company at a special meeting held on Tuesday.

BUILDINGS IN BURY.

THE formal inauguration of the Trevellyan Club, Bury, took place on the 28th of March, in Philips Hall, in the large assembly-room connected with the establishment. The premises comprise billiard-room for three tables, 50 ft. by 28 ft.; club-room, 32 ft. by 20 ft.; reading-room, 25 ft. by 20 ft.; library, chop-room, residence for steward, and extensive cellarage.

Philips Hall, in which the inaugural meeting was held, is a room on the ground-floor, 90 ft. by 60 ft., especially designed for large political meetings, with ample openings directly into the street, without the intervention of passages or staircases. The buildings are designed in the Domestic Gothic style, with pitch-pine open roofs and boarded ceilings throughout, which are thought by some to be the most perfect of their kind in England.

The premises belong to Mr. R. N. Philips, M.P., and are by him rented to the club at a low rate. The buildings have been erected in separate contracts by townspeople, at a cost of nearly 8,000*l.*, from plans prepared by Messrs. Maxwell & Tuke, of Bury.

The additions to St. Peter's Schools, Bury, are now completed. The whole building has been remodelled. A large annexe has been thrown out behind at right angles with the original long schoolroom. The floor of the old infants' class-room in the centre of the front has been raised 3 ft. The wall between this and the large room has been removed, and its place made good with wooden shutters. When these are closed the room is used as an ordinary class-room, when open it serves as a platform to the large room, which then assumes a cruciform shape.

The original long schoolroom has been docked at each end. One extremity is converted into an infants' class-room, and the other is divided into two ordinary class-rooms for more advanced scholars.

The work has been executed in separate trades by local builders, at a cost of 1,000*l.* The architects are Messrs. Maxwell & Tuke.

THE "BRITISH WORKMAN" BUILDINGS AT NORWOOD.

A NEW building, bearing the title of the "British Workman," intended for the use of the industrial classes in the locality, has just been erected and opened at Upper Norwood. It is intended for general social, educational, and literary purposes, one of its features being that single and other working men who may not find it convenient to have their meals at home can be supplied at the "British Workman" on reasonable terms, breakfasts, dinners, and teas being provided, and there is likewise a bar at which coffee and other non-intoxicating drinks are supplied. At the rear of the building, on the ground-floor, is a large and convenient hall, capable of holding several hundred people. Here lectures, concerts, and other entertainments are intended to be given, and the hall will likewise be let for public meetings when required. On the first-floor is a reading-room and library, well stocked with well-selected literary and educational works, in addition to which the daily and weekly newspapers are taken. Immediately adjoining is another room devoted to chess, draughts, and other games, and adjacent to this is the smoking-room. The upper floor contains a number of offices and the keeper's domestic and other apartments. The walls of the library and reading-room, smoking and chess rooms, are decorated with pictures and illuminated texts. The establishment may be described as being in every sense a working men's club.

CEMENTING GLASS.

SIR,—Will some one tell me the best material for so perfectly uniting the edges of three panes of glass (placed one above the other) as to protect the centre one, on which is a water-colour painting, from all chance of injury from damp, &c., the above to form the light in a window with Bath stone framing?

S.

A CLUB HOUSE, PUBLIC BATHS, AND GARDENS ON THE SHAFTESBURY PARK ESTATE.

AT a meeting held last week at the Shaftesbury Park Estate, Lavender Hill, Wandsworth, Mr. Swindlehurst, secretary to the Artisans' Dwellings Company, stated that it was intended to convert the premises used as the Estate Agency Office into a club-house, equal in accommodation to any at the West End, with library, reading, smoking, and billiard rooms. This, it was hoped, would be ready by June next. A hall was being built which, among other things, it was intended to let to benefit clubs and similar societies. The present hall it was intended to convert into swimming and washing baths, if they met with the support of the inhabitants, and it was suggested that a company should be formed for the purpose. Brassey-square, a space about one acre and a half in extent, the Estate Company were going to make into a garden like that on the Thames Embankment. Seats would be placed there, and it was intended to have a band to play there in the summer months. The board of directors had decided that the work must be done at once, and it was hoped that it would be completed by August, and that the next flower-shows would be held there. He added that the Board, at its last meeting, had resolved to offer to build a station and bridge on the site of the present level crossing, at its own expense, and also to bear the expense of working it until it paid the railway company, on condition that, at the end of five years, the money were repaid with 4 per cent. interest. Such a station, he observed, would be of great advantage both to the Estate and the railway company, and would advance the value of the property in the neighbourhood at least 20,000*l.* He remarked that he hoped, before he died, to see the three estates completed,—Shaftesbury Park, with its 8,000 inhabitants; Queen's Park, with its 16,000; and the estate at the East End, with 12,000.

CASES UNDER METROPOLITAN BUILDINGS ACT.

GREENHOUSES.

AT Hammersmith, Mr. Henry King, a builder, of Clarence-place, Kensington, was summoned by Mr. W. Coats, District Surveyor, for erecting a projection with wood at the rear of 10, Stanley-gardens, Notting-hill, contrary to the Building Act.

Mr. Coats said there was a balcony at the back of the house abutting on some garden ground, and the defendant had enclosed it with wood and glass, converting it into a kind of conservatory.

Mr. Bridge wished to know whether such a building was contrary to the Act?

Mr. Coats said it was, if not constructed of incombustible materials, iron bars, and glass. An application was made to the Metropolitan Board of Works to allow the building to be retained, but it was refused.

Mr. Claydon, who defended the summons, submitted that the building came under the exemptions applicable to greenhouses. The balcony consisted of stone, which had been merely enclosed with woodwork sashes and frames. Colonel Allen, who resided in the house, applied to the Garden Committee, who offered no objection to the plan.

Mr. Bridge, on referring to the Act, said greenhouses were exempt, so far as the necessary woodwork for sash-frames and doors.

Mr. Coats, in reply to the magistrate, said there was no more woodwork than was necessary for the sash-frames and doors in a greenhouse. He considered that it was a projection.

Mr. Claydon said almost every house in the neighbourhood had a similar conservatory.

Mr. Bridge held that it was a greenhouse, and dismissed the summons.

Mr. Claydon said Colonel Allen did not apply for costs, as he believed Mr. Coats had acted in good faith.

*** Mr. Bridge's words, if correctly reported, would admit of a wrong inference. The terms of the exemption are,—"Greenhouses, so far as regards the necessary woodwork of the sashes, doors, and frames," not "the necessary woodwork *for* sash-frames and doors." The Act does not permit any part of a greenhouse to be *enclosed* with wood.

Mr. Geo. Marcham was recently summoned by Mr. Knightley, the district surveyor, at the Hammersmith

Police-court, for erecting a greenhouse in his district without giving notice.

The defendant denied it was a building, although it was 30 ft. long, 12 ft. wide, and 7 ft. high, had a chimney, was warmed by hot air, and had a foundation of brickwork 9 in. high above the surface of the ground.

The District Surveyor submitted that although in the interpretation clauses of the Act no definition of the word "building" was given, there could be no difficulty in this case, as a greenhouse is defined to be a building, and is partially exempted. He also contended that it was his duty to supervise such structures, and to insist on the provisions of the Act being observed so far as relates to the thickness of walls and footings, the construction of chimneys, and fixing pipes for heating.

Mr. Bridge, the magistrate, told Mr. Marcham that he would have given a decision against the district surveyor if he could, but could not, as he believed him to be right.

SCOTTISH HONOURS TO A FOUNDATION-STONE.

THE laying of foundation-stones is a ceremony that generally passes off in the metropolis without much fuss or expense. Our Scottish friends consider, however, that the "planting of a new building" deserves a public holiday and gay processions—even when the cost is as low as 4,000*l.*—as witness the following description of laying the foundation-stone of the Public Hall of Stonehaven, a seaport, and the county town of Kincardineshire.

The chief actors were of the secret order of Freemasons, and the Masonic rites were performed by Lord Inverurie, Deputy Provincial Grand Master of Forfarshire, and not only was a holiday kept, but the inhabitants of Stonehaven and numbers of people from a distance turned out to witness the proceedings.

The procession was formed in the market-square, where it was marshalled by the head policeman on horseback. First came the local artillery volunteers, headed by their band. Next came a large number of Good Templars, wearing regalia, and carrying numerous flags and banners. Then a concourse of school-boys, carrying bannerets, and cheering. Next came a number of the ancient order of Foresters, wearing sashes, horns, and displaying magnificent flags. The different trades of the town now followed, the blacksmiths leading, with a couple of stalwart smiths busily engaged at a forge on a lorry drawn by horses; while seated on an extemporised "dickie" was an old man got up as Vulcan. The operative masons followed with the figure of a "doobie," busily engaged hewing a stone, said hewer smoking a cutty, and looking very "beery." A lorry, drawn by three horses, with outriders wearing helmets, conveyed a couple of joiners, sweating away at a bench; while a beautiful model of the intended building was carried by a number of men behind.

A naval element was then introduced in the shape of a well-known citizen "paddling his own canoe," which, mounted on a vehicle, was drawn along by a number of Cowie fisherman; and this was appropriately succeeded by the Life Brigade with a rocket apparatus, a large fishing boat, and a great number of old fishermen.

Headed by another brass band, the Town Council and Trustees of the new Hall next appeared, and then an imposing array of Freemasons from a great number of lodges from various parts of Scotland, in full costume, brought up the rear, accompanied by an interesting relic carried by the Town Clerk—a heavy old axe, which had been thrown out by an explosion of a powder magazine at the siege of St. Jean d'Acre.

After perambulating the principal streets of the town, all of which were lined with spectators, the procession returned to the new Hall, where a large stand was erected, crowded with ladies and gentlemen.

Lord Inverurie then laid the stone with a silver trowel, in true Masonic style, the usual libation of wine and oil being poured on, after his lordship had administered the orthodox three knocks.

In the evening a grand banquet was held, and the inhabitants enjoyed themselves outside and inside their houses with unbounded hospitality and hilarity.

The site of the hall is in Allardice-street, and the plans are by Messrs. Matthew & Lawrie, Inverness. The building will have a handsome front elevation in the Italian style. The ground-floor will contain billiard-room and retiring-rooms; on the first-floor will be the council-room and supper-room, which, by the removal of sliding divisions, can be converted into a hall; and the hall-keeper's residence is above. The hall proper is placed immediately behind the front buildings, and measures 63 ft. by 37 ft., and 28 ft. in height. The cost will be upwards of 3,000*l.*

A BOULEVARD FOR LIVERPOOL.

THE Liverpool Town Council have just decided upon a measure of improvement in the shape of a new boulevard, which, as Mr. J. A. Picton, architect and councillor, says, will become "the Champs Elysées of Liverpool."

A few years ago the Corporation formed a new park at the south end of the town called Sefton Park, which contains 382 acres, 113 of which are to be taken up with building sites. In front of this park is Prince's Park. The chief entrance to these two open spaces is through the Prince's-road,—a straight road, upwards of 900 yards long. Nearly the whole of the west side of this road is skirted by mansions, with large areas in front. Its width is 36 ft., with a footwalk on each side, 12 ft. in width; the total width of the road, therefore, being 60 ft. On the east side of the road lie the fields belonging, almost exclusively, until quite recently, to the Earl of Sefton, and which are called Parliament Fields. They have, however, been given up to the builders, been laid out in streets, and a great number of houses have already been erected. The Local Parks, Gardens, and Improvements Committee, perceiving the opportunity that this presented for the formation of a boulevard, instructed the Corporation surveyor, Mr. Thomas Shelmerdine, jun., to draw up plans with that object, and these plans have now, after some delay, been adopted.

It is proposed to leave the Prince's-road unaltered, but the present footwalk on the east side will be done away with, and a boulevard formed, extending from the Jews' Synagogue to the entrance of Prince's Park, a total length of about 870 yards. This promenade will be formed with a central avenue 10 yards wide, with grass verges on each side, 3 yards wide, planted with trees, seats being provided along the whole distance. Entrances will be left on the boulevard, for passenger traffic only, at the junction of cross streets, and ornamental lamps fixed in the centre. Beyond this, an inner road will be made, 7 yards wide, and a footwalk, 3 yards wide. The houses fronting this inner road will be set back, and have an open area 10 yards in width.

The necessary negotiations for this improvement have been made between the Corporation and Messrs. David Roberts, Son, & Co., on behalf of the Earl of Sefton and themselves. The Corporation buy the piece of land, twelve yards in width, for the sum of 7,200*l.*; the vendors giving the land for a ten-yard street on the east side of the promenade, divided into a 9-ft. parapet on the east side, and a 21-ft. carriage road. This road is to be completed at the expense of the Corporation before the 1st of next January. The grounds and promenade are to be completed before the 1st of May in next year, and to be for ever maintained by the Corporation as a public walk and pleasure-ground.

Including the land, the cost of the whole improvement is estimated at about 12,000*l.*

EGYPT AND THE NILE.

ONE hundred and sixty water-colour drawings by Mr. Elijah Walton, made in Egypt, Nubia, and by the Nile, are now on view in the Burlington Gallery, Piccadilly, under the direction of Mr. W. M. Thompson, of Cockspur-street. They include a number of clever drawings, reminiscences of a country always interesting, and please us better as a whole than the Alpine drawings by the same industrious artist exhibited last year. Of some of the latter Mr. Thompson has produced chromolithographs, so exactly like the drawings as to give other drawings by the same hand the aspect of chromos.

"FROM TRAFALGAR-SQUARE TO OXFORD-STREET."

SIR,—A gentleman, who, I presume, is "a citizen" of London, and who dates from the St. James's Club, Piccadilly, wrote last Saturday to inform the *Times*:—"It is only through you [the *Times*] that the citizens of London can hope to make their voice heard when they would comment on the doings of the Metropolitan Board of Works." Now, it strikes me that others, besides the citizens of London, have in this particular case to thank the *Builder*, not the *Times*, for the reconsideration which has been given to the route of the new street from Trafalgar-square to Coventry-street; and to thank you for having pointed out the artistic incongruities patent, not to the last alone, but to other of the schemes of improved streets lately executed by the Board.

Moreover, some of the letters printed in the leading journal in the very biggest type,—notably that from the Suffragan Bishop of Guildford,—upon the overcrowded condition of houses in our metropolitan and city slums, almost imply a recent discovery of the fact. Have Londoners remained ignorant of the "overcrowding"?

Surely not for want of being told. It is wonderful to note for how many years the existence of evils may be pointed out without making any impression till the public mind has been prepared and the right moment arrives.

ONLY A LONDONER.

"THE REVISED CODE" AND QUANTITIES.

SIR,—The article on "The Revised Code of the Institute," in your last issue, admirably accurate in general, seems to me to fail in defining the precise position taken up with reference to Fellows to be henceforth admitted under the revised declaration if they wish to supply their own quantities. Your article states that they may do so "only on the understanding that they are paid for by the client *direct*, and not by the contractor." The revised declaration for Fellows does not say this, or mean it. It makes a Fellow engage "that I will not take out quantities except for works to be executed under my own superintendence, and then only with the concurrence of my client, such quantities being paid for by him."

At the special general meeting where this declaration was adopted, the suggestion was made that the word "direct" should be introduced, so that the last sentence might run, "Such quantities being paid for by him direct." That suggestion was not adopted, and it was officially explained that what was intended would be carried out in any case where, the concurrence of the client being first obtained, the charge for quantities was included in the customary manner, in the contract sum, and *paid by the builders*, because being refunded to him by the client, it is really *paid by the clients*.

Possibly this is not as far as the rule can be carried with any hope of success. Certainly this is the law of the Institute as laid down in the most distinct manner in the hearing of the present writer. It may be objected that this ruling makes the legislation imperfect; but my object is to remove any possiblity of what is far worse than imperfection, namely, misapprehension, and to point out that, beyond all doubt, every Fellow of the Institute who signs the new declaration will under it be at liberty to take out his own quantities, and receive payment from the builder, provided he has his client's concurrence. This fact is, I think, alluded to, though not stated in so many words, in your article of March 17th on the Illicit Commissions Bill.

S.

BUILDING AT KILBURN.

SIR,—Having often noticed your readiness to comment on doubtful building transactions, I take the liberty of bringing under your notice a building operation in Kilburn. I am not a builder nor anything connected with the trade, but I could not help noticing the building of some houses on the Freehold Land Society's estate, near the Brondesley Park or Edgware-road Station of the North London Railway. I noticed that *road scrapings* were being carted to several points on this estate, and wondered what could be the meaning of it, when, in passing a row of houses, I noticed a labourer busily engaged in manufacturing mortar from what appeared to be road scrapings and dung, mixed with a small portion of lime and cinder ashes. This may be all right, but I should much like to know what the district surveyor and medical officer of health say.

E. S.

LAWN TENNIS.

SIR,—Will one of your correspondents tell me the best and cheapest mode of laying down a ground for lawn tennis? Say, when the formation level is completed, in what manner he would then proceed to lay a smooth floor requisite for playing lawn tennis on? Asphalt or cement would be too expensive.

W. E. B.

THE ANCIENT MONUMENTS BILL.

SIR,—Under this head I have read an article in your paper dated the 7th inst. with some interest, and I beg to be allowed room for a few remarks, seeing that among other acts named as Vandalism the Great Tolmen Rock, in Cornwall, has been mentioned.

This antiquity was, many years ago, offered and pressed on an association for a small amount,—not one-tenth of the real value,—but no archæological society would give it, and the efforts of the freeholder to secure the rock came to nought. The estate came to our family by purchase, and this landmark was looked on with pride by us, until the quarry foreman (who had strict orders not to touch the rock) blasted, by night, the foundations, and threw down the mass which was stopping his quarry operations. I would ask, how many cases, somewhat similar, may be found.

I cannot believe that Vandalism is the correct word to be used, but rather that until very lately there has not been that interest manifested by archæologists in such objects as to lead them to give an equivalent for property on which monuments stand, so as to preserve them from destruction.

WM. HOSKEN.

Granite Works, Penryn.

FALL OF WORK, MEUX'S BREWERY.

ON Tuesday morning an accident of an alarming character took place on the premises of Messrs. Meux & Co., the well-known brewers, Tottenham-court-road, by which six men were severely injured and two or three others severely shaken. The works in course of erection were for an ice-freezing room. It appears to have been constructed with two large wrought-iron girders, set about 13 ft. or 14 ft. apart (carrying rolled-iron joists and arches to make a solid floor), and brick enclosure walls, altogether a very strong structure, and to carry a considerable weight. Such a building, of course required some skill in designing, and also in execution, but we fear no architect was employed, the district surveyor merely having the oversight so far as the Building Act is concerned. The immediate cause of the accident seems to have been the putting too much trust in the old, though apparently sound and substantial, walls of the brewery, and so supporting the girders on these on the one side, and iron stanchions on the other.

There might have been also some special shock from some scaffolding falling, or some jar from the machinery at work adjoining, to set it going; but, still, the crushing down of the old wall was the actual and immediate result, causing the girders to slip aside and throw down the brickwork, and the poor fellows executing it.

The South Windows, Leominster Priory Church.—Sir Gilbert Scott, under date March 27, writes a somewhat lengthy letter to the *Hereford Times* in reference to the Priory Church at Leominster. He says:—"The restoration of this noble and historical fabric—begun many years back, and resumed last year—has now so far progressed as to give hope that before very long the whole church—instead of less than one-half of it—may be rendered available for its sacred uses. One hindrance stands in the way; the fact that the magnificent range of windows on its southern side is in such a state of ruin as to render it impossible that the part of the church to which they belong can be used for divine service till they are effectually repaired; while no funds exist to effect this essential object. . . . . They are on a grand scale, and each contains four lights. The whole and each of its halves is subdivided into two arches, each supporting a circle. The smaller circles are exquisitely cusped, while the larger are each divided into three cusped triangles and three cusped vesicæ. The whole of the mouldings, whether of jambs, arches, tracery, or cuspings, are studded with the ballflower, giving the whole a most rich and gemmed effect. . . . . The condition of these splendid windows is *simply deplorable*. . . . . There is, however, enough left to give the exact design of every part, and to supply the actual ancient material for a good deal. If, however, they are allowed to go on unrepaired, not only will it be impossible to use this part (nearly one-third) of the church, but the exquisite remains will very shortly fall and become things of the past."

Miscellanea.

Covering the Albert Memorial.—Our readers have probably heard of the proposition made by Mr. Wills to cover the Prince Consort's National Memorial in Hyde Park with glass. The proposed structure covering the memorial is designed by Mr. Bedborough, architect, for execution in iron, copper, and glass; it is octagonal on plan, 200 ft. in diameter, with projections on four alternate faces of the octagon, 80 ft. by 27 ft. The width of the central part, supporting the dome, is 130 ft., and the height from the ground to the springing of the dome 145 ft.; the extreme height from the ground to the top of the figure surmounting the lantern on the dome is 340 ft. The principal entrance, which is 25 ft. wide, is from Kensington Gore, the archway of the entrance, cuspated, is carried into the gable, which is fitted with Gothic tracery; the other principal faces of the octagon are similarly treated. Clusters of columns, forming the piers at the intersecting angles of the octagon, are carried up in stages to the springing of the dome, terminating in gabletted pinnacles and open traceried piers. From these piers (at the base of the dome) spring the gables which terminate the faces of the octagon. These are filled in also with cuspated Gothic tracery. East and west of the central structure, and connected therewith by corridors, it is proposed to have gardens, in which shall be placed trees and plants representing the vegetable kingdom of the four quarters of the globe. We run very little risk of being wrong when we say, without any reference to the goodness or otherwise of the design, that no such structure will be permitted in Hyde Park.

The Choice of a Place to Live In.—On the 24th ult. Professor Corfield delivered a lecture at the hall of the Society of Arts, John-street, Adelphi, to the Trades Guild of Learning, his subject being "The Choice of a Place to live in." The subject for the evening was moisture. Having first explained the use of hydrometers and the rain-gauge, the question of rainfall was dealt with. Very little connexion, the lecturer said, had been made out between the rainfall and diseases, except that after a very heavy rain or thunderstorm epidemic diseases declined. Quoting Humboldt's rule that in relation to health after height above the sea the most important thing was distance from the sea, Professor Corfield explained the causes of land and sea breezes, and the effect of nearness to the ocean in equalising temperature. As to choice of a dwelling-place, houses built upon pervious soils, through which the water could drain away, as gravel, sand, and chalk, were generally the most healthy. Lung diseases, rheumatism, and consumption, were less prevalent. In all houses there should be a damp-course to prevent the water from rising up the bricks of the walls, as it otherwise would do, and the basement also should be impervious to moisture. This was especially necessary where houses were built, as was often the case in London, on what was called "made ground."

Street Hydrants.—Mr. W. Haywood, the engineer to the City Commissioner of Sewers, gave evidence before the Select Committee on the Metropolitan Fire Brigade on the 26th ult. He said he was in favour of laying down hydrants in all the thickly populated parts of London; in other parts the necessity was not so pressing. When hydrants were laid down generally, the police could utilise them in extinguishing fires as readily as the Fire Brigade. Very little drilling would be necessary, because all that would be required was that a sort of drum or truck with a reel on it should be run out. The first five minutes at a fire are generally the most important.

The "Level" at Brighton.—The *Brighton Herald* says that the first step is being taken for rescuing the Level from the condition which has so long been a disgrace to the town, by effectually draining it. A large quantity of earth, obtained from the grounds at the back of the Training Schools, where building operations are going on, has also been carted on to the outer enclosure surrounding the Level, and the old iron railing is being removed with a view to being replaced by a dwarf wall and iron railing.

Fire in Southwark Bridge-road.—A slight fire occurred on Wednesday night, at the premises occupied by Mr. J. Stannah, doing but little damage to the offices. We understand that business will be carried on as usual.

The late Mr. Gutch, Architect.—The memorial window placed in Holy Trinity Church, Paddington, by Mrs. Gutch, was quite spoilt by the gallery cutting it in two. One has been erected, therefore, in the east window, Mr. Wailes having utilised the former one, adding four fresh subjects. The higher five lights show, He is Risen, the Entombment, the Crucifixion, the Ascension; three angels below, with the emblems of the Crucifixion. The five lower lights,—The Six Works of Mercy, the Good Samaritan, and Dorcas working for the Poor; underneath, three angels holding the inscription, "Go and do thou likewise." It was unveiled on Easter Sunday. The inscription at the base of the window is as follows:—"To the glory of God and to the memory of her beloved husband, George Gutch, this window is erected by his widow, Mary. 1877."

"The Kensington Gore Mansions, Limited."—Under this somewhat incomplete title endeavours are been made to form a company, with a capital of 250,000*l.*, to erect a pile of residences on the plot of land in the Kensington-road, adjoining the Royal Albert Hall. The architects somewhat disingenuously contradicted us when we said it was rumoured that those buildings were to be thirteen stories in height, and said they would be only five stories; the fact being that it was originally intended, as we learn on the best authority, that there should be twelve stories, and that the design now before the public shows in parts seven. The rent of the land, one acre and two-fifths in quantity, is called 4,800*l.* a year, or 3,429*l.* per annum per acre. At twenty years' purchase we get, therefore, as the value of the freehold land, 68,580*l.* per acre. At an average of 1*l.* per week per room a total rental of 31,760*l.* per annum is looked for.

The Exchange Seed Warehouse, Dumfries.—New premises for Messrs. Kerr & Fotheringham, seed merchants, have just been erected on the White Sands, Dumfries, from plans by Messrs. A. Crombie & Son, architects. The open court of the old auction mart (on the site of which the premises have been erected), has been covered in with a pavilion roof, supported on iron columns and girders, and now forms a most suitable warehouse, measuring 52 ft. by 68 ft. This will be devoted by the firm to the purposes of a corn exchange, and will be used by the farmers of the district. The tradesmen employed were,—builder, Mr. Lockerbie; joiner, Mr. Armstrong; painter, Mr. Muir; slater, Mr. Kirkpatrick Bridges; plasterers, Messrs. Moffat & M'Cubbin; plumbers, Messrs. Drummond & Son; concrete, Messrs. Wilkinson, Newcastle.

The Caxton Celebration.—On the 26th ult. a meeting was held in the Egyptian Hall of the Mansion House, to promote a loan collection of the works of Caxton and other antiquities and appliances connected with the art of printing. The exhibition, which will be opened for two weeks, commencing on Monday, June 11, will be held at the Exhibition Building, South Kensington. Judging from what we hear, the gentlemen who are managing the affair are either unacquainted with the proper mode of proceeding in such endeavours, or they contemplate keeping it all snugly in their own hands,—in which case a very modified success must be looked for.

Bursting of a Reservoir in America.—Particulars have been received in New York of the bursting of a reservoir at Staffordville, Connecticut. The reservoir contained a volume of water 600 acres in superficial extent, and when the dam gave way a torrent 30 ft. deep rushed at the rate of five miles an hour over six miles of country, through the village of Stafford Springs, where the church, town-hall, the bank, several business buildings and dwellings, the railway depôt, and half a mile of the line, were destroyed. The total loss is estimated at 1,000,000 dols. Only two persons are reported drowned.

Monument.—The memory of the late Right Hon. T. Sotheron Estcourt is to be perpetuated by a fountain and statue erected in the Market-place, Devizes. A committee, of which Earl Nelson is the chairman, has been appointed to carry out the arrangements. The cost of the memorial will be about 1,800*l.*

Sir John Soane's Museum.—The trustees of Sir John Soane's Distressed Architects' Fund met at the Museum on the 20th ult., and awarded the funds which had accrued during the year.

Royal Institute of British Architects.—At the ordinary general meeting of this Institute on Monday evening last, Dr. Schliemann was elected, by acclamation, as an Honorary and Corresponding Member, and the President, Mr. Charles Barry, announced that it was proposed to present the diploma of membership to the Doctor at a special meeting of the Institute to be held on the 30th inst., when it was hoped that architects would assemble in strong force to do honour to the distinguished archæologist. In reply to a suggestion from Professor Donaldson that some efforts should be made to obtain for the Institute some specimens of Sir Charles Barry's exquisite sketches and drawings, the President explained that when his father was a young man he had embraced the offer made by a Mr. Bailey to go with him on a tour to Rome and Egypt, on condition that his pencil was placed at Mr. Bailey's disposal. His father had, with Mr. Bailey's sanction, made a number of drawings for himself, but unfortunately these were all lost in landing at Calabria. The other drawings remained until lately in the possession of Mrs. Bailey, and had been bought by Mr. Wolfe, an old friend of Sir Charles Barry, and presented to his godson, Mr. John Wolfe Barry, in whose possession they now were. The President said he would take care that Mr. Wolfe Barry was apprised of the wish expressed by Professor Donaldson. Two papers on some of the condemned City churches were then read,—the first giving the results of some of the labours of a sub-committee appointed by the Institute; and the second, by Mr. W. M. Teulon, discussing the general questions involved in the removal of these buildings. We shall give a report in our next.

Labourers' Dwellings at Stratford-on-Avon.—On the 15th ult. the second annual meeting of the Stratford-on-Avon Labourers' Dwellings Company was held. From the report it appeared that during the past year seventeen cottages had been erected in Mansell-street, in accordance with plans prepared by Mr. Thomas T. Allen (the company's architect). The cottages had been built by Mr. Thomas Bailey, of Leamington, whose tender for the work amounted to the sum of 2,683*l.* 16*s.* The whole of these cottages had been let to tenants selected from a list of 48 applicants, at a weekly rent of 3*s.* 6*d.* (the top house letting for 4*s.*), and ten of the seventeen were now finished and occupied, and the remainder would be ready for occupation in a few days. The directors had succeeded in purchasing from Mr. William Eborall, the block of buildings in Guild-street, known as Shakespere Court, for 700*l.* The property consisted of fourteen cottages, but the accommodation was notoriously bad, and it was the object of the directors to make such improvements as would make them fit for occupation by a respectable class of tenants without families. To do this an outlay of about 200*l.* would be required, and they could be let to pay at least 7½ per cent. on the cost. In conclusion, the directors reassured the shareholders that their investments would meet with a fair return in the shape of dividend, the first declaration of which would be made at their next ordinary general meeting. The report was adopted.

Horsham.—A new pulpit has just been erected in the old parish church of St. Mary's. It is placed there as a memorial of the late Mr. Thomas Sanctuary, of Roffey Park, by his children, and was executed by Mr. Boulton. In design it is similar to the pulpit in St. Mary's, Powerstock, of which parish the Archdeacon of Dorset, one of Mr. Sanctuary's sons, is the vicar, and it was originally drawn by Mr. Hicks, architect, of Dorchester. It is octagonal in shape, and made of Caen stone. Four sides of the octagon are formed into niches, containing statues of St. Peter, St. Paul, St. John, and St. James the Great, standing on carved pedestals, and above them are ogee canopies, with crocketed gables and carved finials. The mouldings spring from carved angels holding the symbols of the Epistles and Gospels. The body of the pulpit is covered with diaper, terminating in a cornice.

The late Mr. Mark Antony Lower.—The Sussex Archæological Society propose to erect a memorial to the late Mr. Mark Antony Lower. It is suggested that it should be erected over the tomb where lie his remains, and also those of his wife and second daughter. Subscriptions are invited.

Architectural Association.—On Saturday afternoon last, a number of the members of this Association visited the new house which is now in course of erection at Holland Park, Kensington, for Mr. W. Burges, architect. Externally, the building is of red Chilton bricks, with Box Ground dressings, and the staircase is contained in a bold conical-roofed tower. On the ground-floor the accommodation provided consists of dining-room, 17 ft. by 17 ft.; drawing-room, 24 ft. by 16 ft. (exclusive of window recesses 2 ft. 8 in. deep); and library. The library and drawing-room can be thrown into one when required by the shifting of a sliding door. The accommodation on the upper floors consists of six or seven bedrooms, with dressing and bath rooms. In each room the chimneypiece will be a prominent feature. The work throughout is solid and substantial, and this is especially noticeable in the dimensions of the timbers supporting the floors. Mr. Burges has, of course, acted as his own architect, and has been aided in the supervision of the work by his assistant, Mr. Chapple, Mr. Heath acting as foreman and clerk of works. Messrs. Ashby, Brothers, of Kingsland-road, are the builders; and the cost, exclusive of stained glass, ornamental ironwork, &c., will be about 6,000*l.*

Carlisle Railway and Town Improvement Works.—Since last we referred to the Station Extension and Town Improvement Works, Messrs. Ward have made very perceptible strides towards the completion of their contract. In their disjointed state the ten or twelve separate lines perplex onlookers. Messrs. Ward's part of the new viaduct and approaches, including the laying of the water and gas connexions, has been so far completed that foot passengers are now allowed to pass that way. Therefore, though the highest and most commanding portion of the overway is not yet open, the public have the means of forming an idea of its relation to the various streets it intersects; and the idea is decidedly favourable. Another new line of viaduct and overroad,—namely, that from Currock-brow to Crown-street, proceeding at a high level over the three or four railways which it formerly went below,—is neither so elaborate nor so important as that connecting the two sides of Carlisle, but being now nearly made, its advantage to farmers and others coming from that side of the country can be appreciated. There are two other viaducts of large dimensions, but one—that over the North-Western and North-Eastern system at St. Nicholas—has been open for some months; the other, connecting James-street with Boustead's Grassing, — is practically completed, and will be opened shortly.

"Brickological."—The foundation-stone of a new hospital was laid at Walsall on Easter Monday. The building is to be erected from the designs of Mr. Henman, which were selected in competition. The *Birmingham Gazette* says: "We should have been glad to furnish our readers with a description of the proposed building, but instead will briefly state the manner in which our representative, together with a gentleman who has for many years represented the *Post* in Walsall, was received. The builder's son (Mr. Daniel Moore, jun.) having confessed his inability to correctly explain the style of architecture, which a bystander described as 'mongrel Elizabethan,' referred the reporters to Mr. Henman, who at that moment approached them. In reply to their inquiry as to what order the new building would belong to, he turned away with the very lucid reply, 'Oh, bother; it's brickological!' On the 25th of July last tenders were obtained, and that of Mr. Daniel Moore, Stafford-street, Walsall, was accepted, the amount being 5,835*l.* The work was begun shortly afterwards, and is to be finished in June, though probably it will be somewhat later." Is "Brickological" a new name for the "Queen Anne" style?

Opening of the Art-Exhibition at Naples. A despatch informs us of the successful opening, on Sunday, April 8, by the King of Italy, the Royal Family, and an infinity of distinguished personages, of the first Art-Exhibition in Naples. The building is well arranged. Statues, pictures, objects of antique art, fill it. Though narrow and long, it is in three stages. Their majesties remained three hours examining the objects exhibited. The collection is beyond all expectation, not only on account of the number, but of the artistic merits of the exhibitors, both native and foreign.

The Glasgow Campbell Monument.—On the hundredth anniversary of the birth of Thomas Campbell, the poet, which falls on the 27th of July next, a monument to his memory, consisting of a bronze statue, will be unveiled in Glasgow, his native city. The result of a public subscription, the monument has been designed by Mr. John Mossman, whose model was selected out of three submitted in competition. The sculptor has chosen to represent his subject in the prime of life, when his honours, literary and academic, were "thick upon him." The costume adopted is that of the Prince Regent's time. The casting has been undertaken by Messrs. Cox & Sons, Thames Ditton. During the spring this firm will also be proceeding with the Livingstone memorial, and they anticipate having both completed about the same time. The pedestal of "axed" granite, bluish-grey in colour, will have a height of 12 ft., and will closely resemble that on which the Burns monument stands. The *Scotsman* states that Mr. Carrick, master of works, who was commissioned to select an appropriate site, has recommended that the statue be placed opposite the Burns, on the south side of the square.

Early Literature.—The *Academy* says that Mr. Faulke Watling has made an interesting old-book discovery in the British Museum, namely, that the little sixteen-leaf anonymous "boke for to lerne a man to be wyse in buylding of his house for the helth of (his) body and to hold quyetnes for the helth of his soule and body, etc. Imprynted by me, Robert Wyer, dwellynge at the sygne of St. Iohn Euangelyst," &c., is, in fact, the first eight chapters of the well-known quaint old Doctor Andrew Boorde's racy "Dyetary of Helth" of 1542, &c. Mr. Faulke Watling has drawn up an account of the little volume, with a copy of its additional verses and collations, which will be printed at once by the Early English Text Society, and issued as a supplement to Mr. Furnivall's edition of Andrew Boorde.

Churchyard Crosses, Kidderminster.—The dilapidated condition of the ancient cross which has hitherto been an object of attraction to visitors to the parish church of Kidderminster, has been a matter of consideration for many years, and some time ago a body of young men, most of whom had been brought up in the parish church schools, determined to take measures either to restore it, or to erect another as nearly as possible like what the old cross is supposed to have originally been. Before, however, their intentions were brought to bear, a private individual came forward and expressed a desire to erect a new cross on the model and site of the old one, and, permission having been granted, Mr. Arthur Blomfield, architect, was employed to make the design, and Mr. Binnian, builder, to work it out in stone. The cross is now erected. The old cross has been placed opposite the chancel-door.

The Yorkshire Fine Art and Industrial Exhibition, 1879.—At a recent meeting of the Executive Committee, at York, under the presidency of Sir James Meek, it was announced that the drainage of the site of the Exhibition had been satisfactorily carried out, that the conveyance of the reversionary interest of the Crown in the land was about to be completed, and that, with the exception of a very insignificant sum, the whole of the first call had been promptly paid up. It was unanimously resolved that the day for the opening of the exhibition should be fixed for the 1st of May, 1879, and that the architects should immediately invite tenders to be sent in by the 13th of April next for the erection and completion of the permanent portion of the building by the 1st of October, 1878.

Defoe Memorial Manse, Tooting.—It is proposed to build a manse for a Nonconformist minister at Tooting, as a memorial of Defoe's residence there. The style of the building, for which plans have been prepared by Messrs. Tarring & Wilkinson, is Domestic Gothic. It is intended to place a life-sized statue of Defoe under an enriched canopy, between two buttresses, on the right hand of the main entrance.

Scaffold Accident.—Last week a shocking accident happened at Clapham, which has resulted in the death of one man and serious injuries to two others. Some alterations were going on at a mansion known as The Chase, Clapham, for which purpose a scaffold had to be erected, and while five men were engaged upon it it gave way, and they were precipitated to the ground, a distance of 30 ft. or 40 ft.

Jersey New Harbour Works.—The cost of the Jersey new harbour works will prove, it is believed, greater than was originally expected. The estimate of Sir John Coode, the engineer from whose plans the works are being carried out, was 240,000*l.*, but it now appears that that amount is too small by one-half. 170,000*l.* has already been expended, and fresh estimates prepared by order of the Investigation Committee appointed by the States show that 300,000*l.* will be required to complete the works.

Another Theatre!—The London correspondent of the *Northampton Mercury* says there is to be yet another theatre in the Strand! This time the site is to be nearly opposite Somerset House. He "cannot understand this mania for erecting fresh temples of Thespis, while we have so many, like the Queen's, standing empty."

Barnsley.—At a meeting of the Town Council held on the 13th March, Mr. A. K. Balls, of Maidstone, was elected out of thirty-five candidates for the Temporary Assistant Surveyorship, the appointment to become terminable at the pleasure of the Streets and Buildings Committee.

Society of Arts.—A course of lectures on "The Connexion of Greek and Roman Art with the Teaching of the Classics," by Professor Sidney Colvin, will be commenced on Monday next, the 16th inst. The lectures will be given at four o'clock in the afternoon.

Royal Institution.—James Dewar, F.R.S.E., Jacksonian Professor of Natural Experimental Philosophy in the University of Cambridge, was, on Tuesday last, elected Fullerian Professor of Chemistry in the room of Dr. Gladstone, resigned.

Mortuary Chapels and Lodge, Whitworth.—The contracts for these buildings have been placed in the hands of local contractors. The cost of the completed works will be about 3,500*l.* The architects are Messrs. Maxwell & Tuke, of Bury.

Institution of Surveyors.—The next meeting will be held on Monday evening, April 16th, when a paper will be read by Mr. J. Shaw, on "The Rivers Pollution Prevention Act, 1876."

Mr. E. T. Boston, of Bristol and London, has been appointed architect to the Keynsham Burial Board.

TENDERS

For rebuilding "Mount Ephraim," Hernhill, near Faversham, Kent. Mr. E. Gregg, architect. Quantities by Mr. R. Roberts:—

W. & J. Judges	£7,990 0 0
Ashby & Horner	7,546 0 0
Ashby, Bros.	7,460 0 0
Higgs & Hill	7,349 0 0
Smith & Co.	7,333 0 0
Baker & Son	7,308 0 0

For rebuilding warehouse, No. 48, Paternoster-row. Mr. T. Verity, architect. Quantities by Mr. Plimsaul:—

Lane	£2,233 11 0
Hobson	2,187 0 0
Bradwell	1,910 0 0
Simpson & Son	1,897 0 0
Bracher & Son	1,889 0 0
Sewell & Son	1,793 0 0

For marble work at Lord Zetland's private chapel, Aske Hall, Richmond, Yorkshire. Mr. Thomas Oliver, architect:—

Welsh	£1,125 0 0!
Nelson	950 0 0
Walker & Emley	815 0 0
Beall (accepted)	759 0 0!

For the erection of a new tannery at Northampton, for Messrs. P. & R. Phippe. Messrs. R. Davison, Son, & Mackenzie, architects. Quantities supplied by Messrs. E. L. Curtis & Sons:—

Dunkley (accepted)	£6,504 0 0

For new front fittings and additions, 223, Commercial-road, for Mr. W. Findgate. Mr. Knight, architect:—

Judson & Dickerson	£785 0 0
Hearle	765 0 0
Barrow	575 10 0
Cox & Boome (accepted)	567 0 0

For the erection of a drying-shed in Willow-walk, Bermondsey, for Mr. Jonah Oastler. Mr. Alfred Porter, architect:—

Hart	£2,276 0 0
Coleman	1,980 0 0
Shepherd	1,942 0 0
Wells	1,786 0 0

For the erection of a billiard-room and Turkish bath at Holford Lodge, Regent's Park, for Mr. Durham Dunlop. Mr. Alfred Porter, architect:—

Wells	£1,054 0 0
Little	775 0 0
Coleman	769 0 0
Hart	750 0 0
Shepherd	725 0 0

For proposed enlargement of Emmanuel Church, Upton. Mr. George McDonell, architect. Quantities by Messrs. Goodchild & Son:—

Boyce	£7,295 0 0
Morter	7,215 0 0
Sheffield	7,199 0 0
Stamp & Bowtle	6,940 0 0
Perry & Co.	6,826 0 0
Browne & Robinson	6,640 0 0
Dove, Brothers	6,395 0 0
Hill, Higgs, & Hill	6,380 0 0
Gibbons	4,807 0 0

For alterations, &c., at 168, Tottenham-court-road, for Mr. Johnson. Mr. W. S. Trebearne, architect:—

Perkins	£355 0 0!
Anley	300 0 0
Steed, Brothers	175 0 0!

For four schools, Llanbadarn. Mr. S. W. Williams, architect. Quantities supplied:—

Williams	£1,546 12 0
Morgan	1,406 0 0
Stephens & Bastow	1,408 0 0
B. A. & H. Hamer	1,348 0 0
Jones & Co.	1,344 0 0
Berry	1,335 0 0
Davies	1,326 0 0
Speake (accepted)	1,321 0 0
Griffiths	1,237 0 0

For Bristol new police-courts. Mr. J. Thomas, architect. Quantities supplied by Mr. Deane:—

Eastabrooke & Son	£10,300 0 0
Baker & Son	9,444 0 0
Hatherly	9,438 10 0
Davis	8,999 0 0
Brock	8,976 0 0
Cowlin & Son	8,850 0 0
Howell	8,695 0 0
Humphries	8,595 0 0
Krauss	8,500 0 0
Wilkins & Sons	8,475 0 0
Stephens & Bastow (accepted)	8,249 0 0

For house and stabling, Ilford-road, Stratford, E., for Mrs. E. May. Mr. G. Sparks, architect. Quantities supplied by Mr. W. Barrett:—

Pick	£1,200 0 0
Boyce	1,189 0 0
Pane	1,095 0 0
Ward	1,075 0 0
Lewis	1,066 0 0

For the enlargement of an infirmary at Rotherhithe, for the guardians of the poor of St. Olave's Union. Mr. H. Saxon Snell, architect:—

Kirk & Randall	£21,654 0 0
Nightingale	20,640 0 0
Higgs & Hill	20,320 0 0
Carter & Son	19,806 0 0
Chappell	19,687 0 0
Crockett	19,600 0 0
Wall, Brothers	19,812 0 0
Perry & Co. (accepted)	18,650 0 0

For the construction of roads, sewers, &c., at Castle-hill, Ealing, for the Standard Life Assurance Company. Mr. W. A. Boulnois, surveyor:—

Nowell & Robson	£4,517 0 0
Seward	4,479 0 0
Keeble	4,426 0 0
Killingback	4,397 0 0
Jackson	4,150 0 0
Crockett*	3,999 0 0
Bloomfield	3,195 0 0
Adamson & Sons	3,082 0 0

* Too late.

For the construction of an elm trunk and other work in connexion with the extension of the present culvert 200 yards seaward, draining the St. Florence Valley, Tenby. Mr. H. Morley, borough surveyor:—

Longe	£1,381 3 9
D. & J. Davies	1,373 6 0
Richards	1,251 16 4
Bonniwell	1,247 0 6
Coleman, Brothers	1,097 19 2
Thomas	943 1 9
Appleby & Lawton	854 6 2
May & Lewis	817 1 8
Wood and Iron Work only.	
Sinnette	880 0 0
Masonry only.	
Phillips & Cole	800 0 0

For rebuilding the Phœnix Hotel, Princes-street. Mr. A. R. Hughes, architect. Quantities by Messrs. Corderoy & Sandall:—

Hill, Higgs, & Hill	£9,240 0 0
Scrivener & White	9,200 0 0
Bywaters	9,140 0 0
Perkins	8,943 0 0
Grimwood & Sons	8,695 0 0

For the erection of two shops in High-road, Clapton, for Mr. A. W. Webb. Mr. Robert Blackmore, architect. Mr. Peyton Dashwood, surveyor:—

Honeywill	£1,638 0 0
Parker	1,580 0 0
Linfield	1,470 0 0
Wood	1,399 0 0
Street	1,341 0 0
Niblett (accepted)	1,275 0 0

For warehouse, Great Eastern-street. Mr. F. W. Longmore, architect:—

Stimpson & Co.	£9,231 0 0
Scrivener & White	9,051 0 0
Manley & Rogers	8,952 0 0
Little	8,128 0 0
Waldram & Co.	7,420 0 0
Nightingale	7,363 0 0
Jacobs	7,348 0 0
Lawrance*	7,167 0 0

* Subject to his approval of terms of contract.

For the erection of meter and governor-house for the West Ham Gas Company. Mr. Edward R. Thorman, architect. Quantities by Messrs. Franklin & Andrews:—

Mark	£1,395 0 0
Crabb	1,359 0 0
Bange	1,140 0 0
Wood	1,123 0 0
Perry	995 0 0

For detached villa, Dartmouth Park Avenue, Upper Holloway, for Mr. T. D. Case. Mr. J. Glenn, architect. Quantities supplied:—

	House.	Boundary walls, &c.
Lonn	£1,495	£113
Newman & Mann	1,418	114
Crocket	1,397	113
Staines & Son	1,385	108

For works at Homerton Hospital, for the managers of the Metropolitan Asylums Board. Mr. E. L. Bracebridge, architect:—

Main	£1,898 0 0
Barber, Son, & Lutwyche	1,890 0 0
Waldram & Co.	1,841 0 0
Allen	1,769 0 0
Smeaton	1,594 0 0
Hutchinson	1,400 0 0
Parker & Evans	1,375 0 0
Franklin	1,298 0 0
Winship	1,025 0 0
Seed	800 0 0!

For stabling, &c., for the London General Omnibus Company, at Fernhead-road, Paddington. Mr. P. Tosh, engineer. Quantities by Mr. A. J. S. C. Bolton:—

Beach, Brothers	£1,305 0 0
Rickitts	1,250 0 0
Howard	1,177 0 0
Wagner	1,175 0 0
Linfield	1,155 0 0
Parker & Evans	1,108 0 0
Niblett	997 0 0
Mason & Bristy	995 0 0
Aitchison & Walker	986 0 0

For alterations to stabling, &c., for the London General Omnibus Company, at St. Alban's Mews, Edgware-road. Mr. P. Tosh, engineer. Quantities by Mr. A. J. S. C. Bolton:—

Rickitts	£406 0 0
Wagner	367 0 0
Parker & Evans	357 0 0
Howard	345 0 0
Beach, Brothers	345 0 0
Mason & Bristy	336 0 0
Niblett	332 0 0
Linfield	296 0 0
Aitchison & Walker	268 0 0

For shops in Kendrick-street, Stroud, for Messrs. Holloway, Brothers. Mr. W. Clissold, architect. Quantities supplied:—

Niblett & Co.	£7,250 0 0
Drew	7,144 5 0
Wall & Hook	7,000 0 0
Jones & Co.	6,976 0 0
Harper, Brothers (accepted)*	6,050 0 0

* Including excavating for basement, and walling in same.

For the erection of a pair of semi-detached villa-residences, The Spa, Gloucester, for Mr. H. Belcher. Messrs. Haddon, Brothers, architects. Quantities supplied:—
Jones & Co. (accepted).

For the erection of a pair of semi-detached villa-residences, Heathville-road, Gloucester, for Messrs. Moffatt & Allen:—
Jones & Co. (accepted).

Erratum.—The amount of Tender for the cast-iron tank and girder for the Braintree Waterworks, by Messrs. Bells, Lightfoot, & Co., should be £365.

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W. S.—F. P.—F. C.—W. C. T.—R. M.—F. G.—Mr. R.—Constant Reader.—E. & Son.—G. S.—H. S. S.—W. S. C.—S. J.—J. B.—D. C. J.—J. G.—T. F.—B. & R.—A. K. B.—A. B.—R. L.—E. G. H.—B. R.—E. G.—W. & Co.—E. T. B.—F. N. (no).—T. C. S. (next week).—J. E. (next week).—An Architect (the question of "corruptibility" has nothing to do with our opinion that it is unwise for an architect to take out the quantities for the contractors who are to work under him).—W. Y. (the provision as to buildings falling within fifteen years was a suggestion only).—B. A. (to advise usefully as to prevention of damp the cause must be known. Take advice on the spot. Many communications on the subject will be found in our volumes).

We are compelled to decline pointing out books and giving addresses.

All statements of facts, lists of tenders, &c. must be accompanied by the name and address of the sender, not necessarily for publication.

NOTE.—The responsibility of signed articles, and papers read at public meetings, rests, of course, with the authors.

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